

*A webcomic of romance, sarcasm,
math, and language*

xkcd

RANDALL MUNROE

2010

xkcd

2010

a collection of 159 webcomics

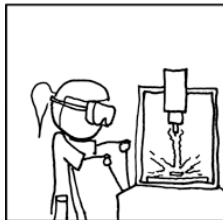
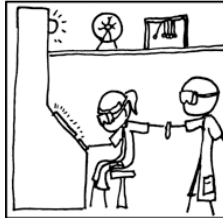
from #683 to #841

by Randall Munroe

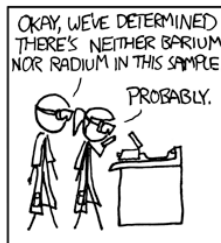
#683: Science Montage

January 01, 2010

MOVIE SCIENCE
MONTAGE



ACTUAL SCIENCE
MONTAGE



The rat's perturbed; it must sense nanobots! Code grey!
We have a Helvetica scenario!

Explanation

This comic makes fun of the artificially dramatized and simplified depiction of science in movies. The unstated premise seems to be that the scientists are trying to get information about a murderer based on a sample obtained from his clothing. The movie version of events involves the two scientists Cueball and Ponytail doing exciting things with a control console, lab rats, a device with some kind of beam (perhaps a laser), and a complicated chemical apparatus. The scientists quickly arrive at the firm conclusion that paint on the clothes is from an "antimatter factory" in Belgrade, Serbia.

While not directly used in the study, a Newton's cradle in motion can be seen in the first panel, a device notoriously useless in any serious scientific study, but very often used in movies, for instance as a prop in the office of a professor. There is also a hamster wheel. According to the official transcript it is a hamster ball but it is clearly not a ball as it has spokes, and thus resembles a hamster running wheel, probably for the rats shown in the next panel.

The actual science version shows the same scientists putting a sample into a device (likely a mass spectrometer or a centrifuge). The device apparently takes about 1 hour and 20 minutes to analyze the sample (according to the clock on the wall moving from about 10:05 to 11:25). At the end of this process, the only thing learned is that there is probably no barium or radium in the

sample. This conclusion is not very helpful on its own, and is not even very certain.

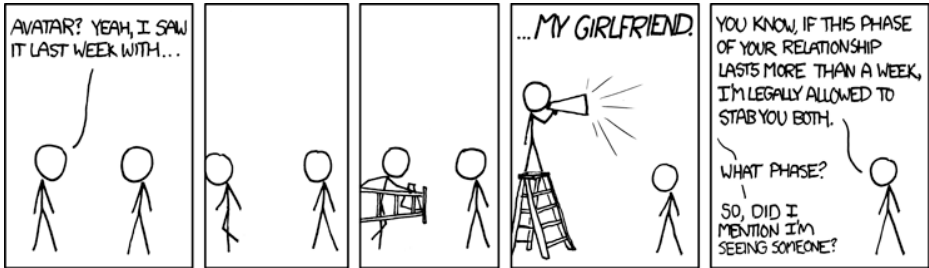
There are several major concepts about science and technology that movies tend to distort for the purposes of a more exciting plot, both illustrated here. One is that the work involves a lot of different exciting-looking gadgets. Another is that the analysis can be done very quickly, and results in very certain and significant conclusions. Besides this, the scientists often seem to have access to a database full of trivial information from around the world. In reality, a scientific analysis of some sample or data often only requires a single boring-looking machine, takes quite some time, and provides a limited result that must be interpreted very carefully to have any meaning at all.

The title text further illustrates a movie science scene, depicting someone deducing the presence of nanobots simply by observing the behavior of a perturbed lab rat. The Helvetica Scenario is a fictional experiment, presented in Switzerland (Helvetia is the Latin name for the country), which assumes that removing only the nucleus (the center of an atom) of a "calcium molecule" in one's skin, but still leaving the electron shell at its position, would cause a massive reaction ending up in heavy mutations. The Helvetica scenario was made up by the BBC comedy show *Look Around You* in the pilot episode, which can be seen [here](#). "Code grey" may refer to Grey goo, a hypothetical doomsday scenario involving nanobots. In 1242: Scary Names Grey goo is on the chart and the Helvetica scenario is mentioned in the title text.

Antimatter is also referenced in 826: Guest Week: Zach Weiner (SMBC), 1621: Fixion and 1731: Wrong as well as being the subject of the what if? Antimatter. It was also mentioned in another what if?: Lake Tea.

#684: We Get It

January 04, 2010



The most brutal way I've ever seen someone handle this was 'Oh, you have a girlfriend. Are you going to get married?' 'I, uh, don't know--' 'Well, do you love her?' '...' 'Anyway, what were you saying about the movie?'

Explanation

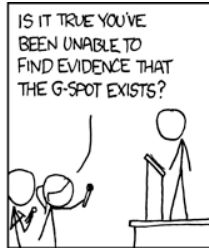
No explanation available.

#685: G-Spot

January 06, 2010

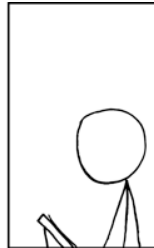
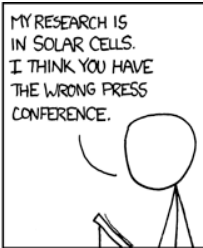
A STUDY PUBLISHED
IN THE JOURNAL OF
SEXUAL MEDICINE
SUGGESTS THAT THE
G-SPOT MAY NOT
ACTUALLY EXIST.

WE GO LIVE TO
THE RESEARCHERS'
PRESS CONFERENCE:



IS IT TRUE YOU'VE
BEEN UNABLE TO
FIND EVIDENCE THAT
THE G-SPOT EXISTS?

MY RESEARCH IS
IN SOLAR CELLS.
I THINK YOU HAVE
THE WRONG PRESS
CONFERENCE.



BUT... YES.

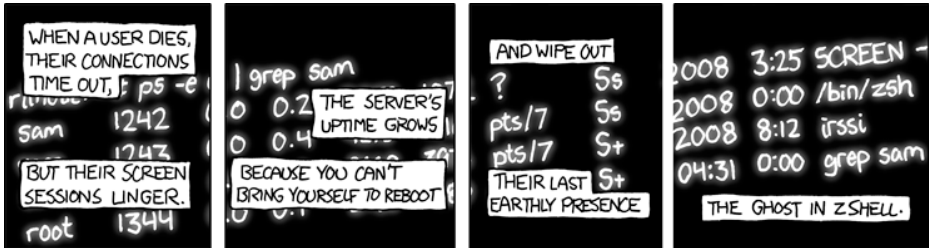
The BBC lead was 'The elusive erogenous zone said to exist in some women may be a myth, say researchers who have hunted for it.' I couldn't read it with a straight face.

Explanation

No explanation available.

#686: Admin Mourning

January 08, 2010



And every day it gets harder to fight the urge to `su` to the user and freak people out.

Explanation

No explanation available.

#687: Dimensional Analysis

January 11, 2010

MY HOBBY: ABUSING DIMENSIONAL ANALYSIS

$$\frac{\text{PLANCK ENERGY}}{\text{PRESSURE AT THE EARTH'S CORE}} \times \frac{\text{PRIUS COMBINED EPA GAS MILEAGE}}{\text{MINIMUM WIDTH OF THE ENGLISH CHANNEL}} = \pi$$

IT'S CORRECT TO WITHIN EXPERIMENTAL ERROR, AND THE UNITS CHECK OUT. IT MUST BE A FUNDAMENTAL LAW.



BUT WHAT IF THEY BUILD A BETTER PRIUS?

THEN ENGLAND WILL DRIFT OUT TO SEA.



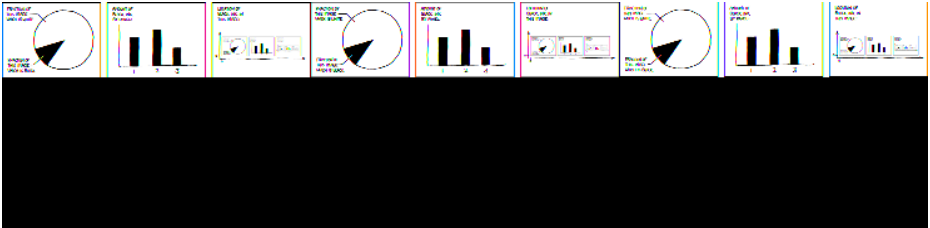
Or the pressure at the Earth's core will rise slightly.

Explanation

No explanation available.

#688: Self-Description

January 13, 2010



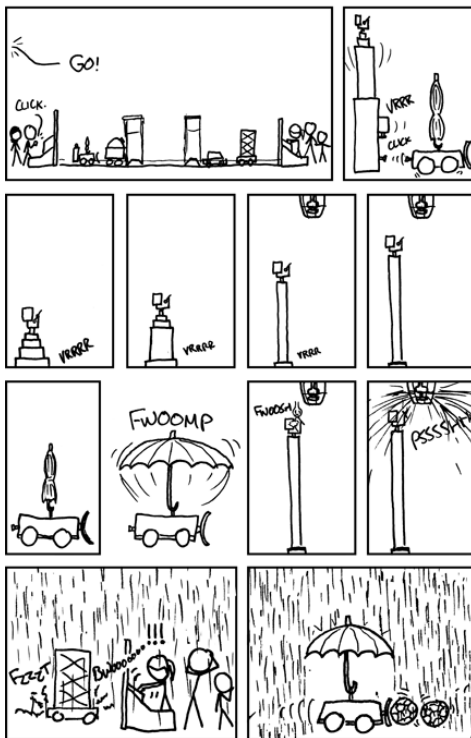
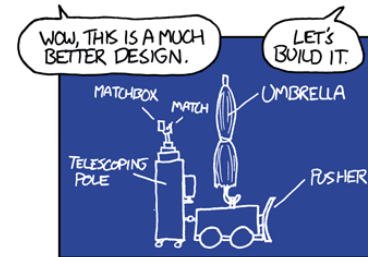
The contents of any one panel are dependent on the contents of every panel including itself. The graph of panel dependencies is complete and bidirectional, and each node has a loop. The mouseover text has two hundred and forty-two characters.

Explanation

No explanation available.

#689: FIRST Design

January 15, 2010



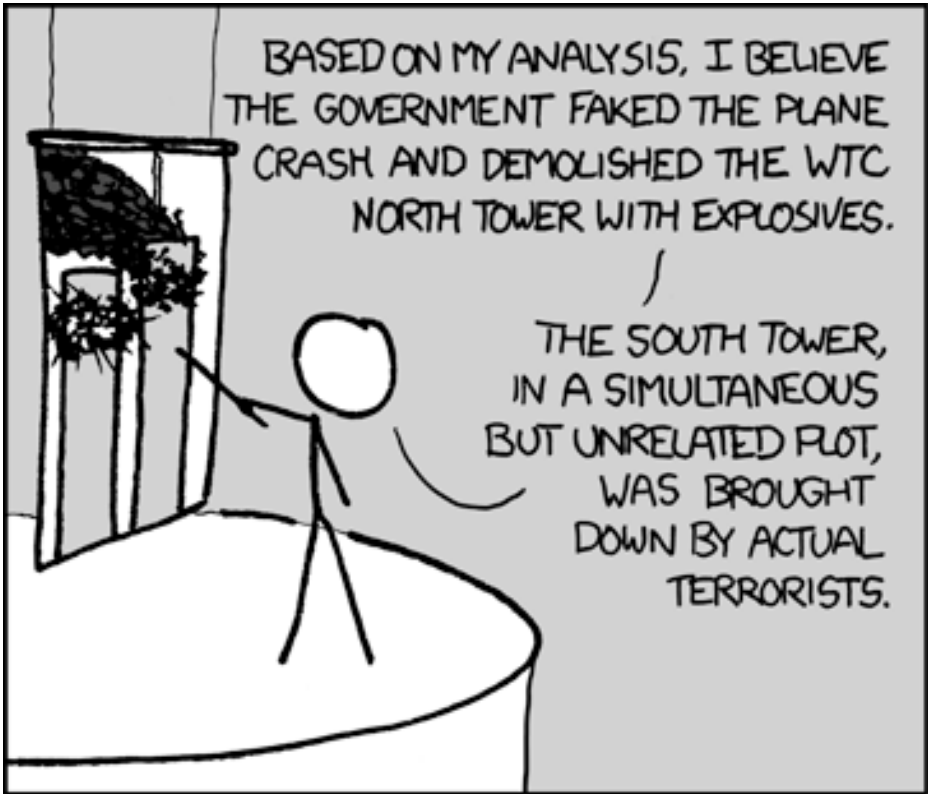
Pool on the roof must've sprung a leak.

Explanation

No explanation available.

#690: Semicontrolled Demolition

January 18, 2010



THE 9/11 TRUTHERS RESPONDED
POORLY TO MY COMPROMISE THEORY.

I believe the truth always lies halfway between the most extreme claims.

Explanation

The World Trade Center towers were destroyed in the September 11, 2001 terrorist attacks (9/11 in American date notation). The planned attack was for two planes to collide with the north and south towers simultaneously, but what ended up happening was that plane 1 hit the north tower at 8:46 am, and the second plane hit the south tower a little less than 20 minutes later. In the ensuing investigation many people raised questions that didn't seem to get a satisfactory answer for several months, if not years. Many people, who called themselves 9/11 Truthers, began to claim that the whole thing was a government conspiracy, in what has come to be known as the "controlled demolition plot" (referenced by the title of this comic), which alleges that the towers were brought down not by the fires caused by the planes but by demolition charges intentionally placed there by the government.

Cueball proposes a compromise for both those who believe in the conspiracy and those who don't. Since there is only a government related video of a plane flying into the north tower — done by a man who was with FDNY fire fighters — it's easy for Cueball to assume that was a government conspiracy. He proposes there was no north tower plane at all, it was faked by the government and planted with the FDNY, and the tower was brought down with controlled demolition. In contrast there is plenty of footage of the plane flying into the south tower, thanks to news reporters and handheld cameras

trying to get shots of the burning north tower, so Cueball finds the evidence of a terrorist attack on the south tower perfectly reasonable and doesn't try to explain it away. He simply posits that the terrorist attack and government conspiracy were running simultaneously by a weird coincidence.

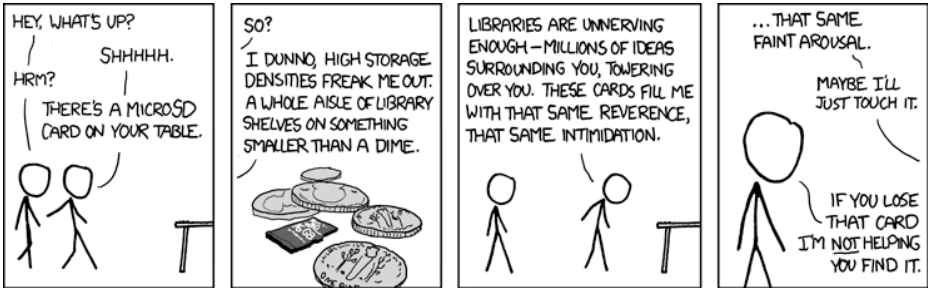
The title text is a restatement of the Golden Mean fallacy: that the truth can be found in a compromise between two opposite positions. In this comic, one of the positions is a fanciful conspiracy theory and the other is a sober fact-based conclusion. The error of this fallacy is apparent here, as it can lead to even more ridiculous conclusions. In this case, the compromise theory would make no one happy because both sides would have to concede claims which they have already dismissed as bogus, as well as accept an incredibly unlikely coincidence.

On January 6, 2016, The Onion, a satirical news site, reported that the government has confirmed Cueball's theory by releasing an article titled, Government Admits It Was Only Behind Destruction Of North Tower.

This is one of the compromises Cueball (or Randall) has proposed, most of which will also be unlikely to be accepted...

#691: MicroSD

January 20, 2010



That card holds a refrigerator carton's worth of floppy discs, and a soda can full of those cards could hold the entire iTunes store's music library. Mmmm.

Explanation

microSD is one version of the Secure Digital memory card format, used in digital cameras, cell phones, and other devices. It is very small, only $15 \times 11 \times 1$ mm, but can hold large amounts of data. The US dime in contrast has a diameter of 17.91 mm. When this comic was published in January 2010 the maximum capacity for microSD cards was 16GB. The current maximum capacity is 2TB (as of December 2024).

The main character in the comic (on the right) thinks about all the ideas that could be expressed by the data in the microSD card, or in a library. He feels not just reverent and intimidated, but sexually aroused by the thought. As he begins to touch it, his friend is disgusted by what might happen if he uses the card as some kind of sex toy, and does not want to help him locate the card if it gets "lost" inside a body cavity.

The title text seems to be the main character thinking about how much data the card holds, in terms of floppy disks and the iTunes music library, and feeling aroused by these thoughts.

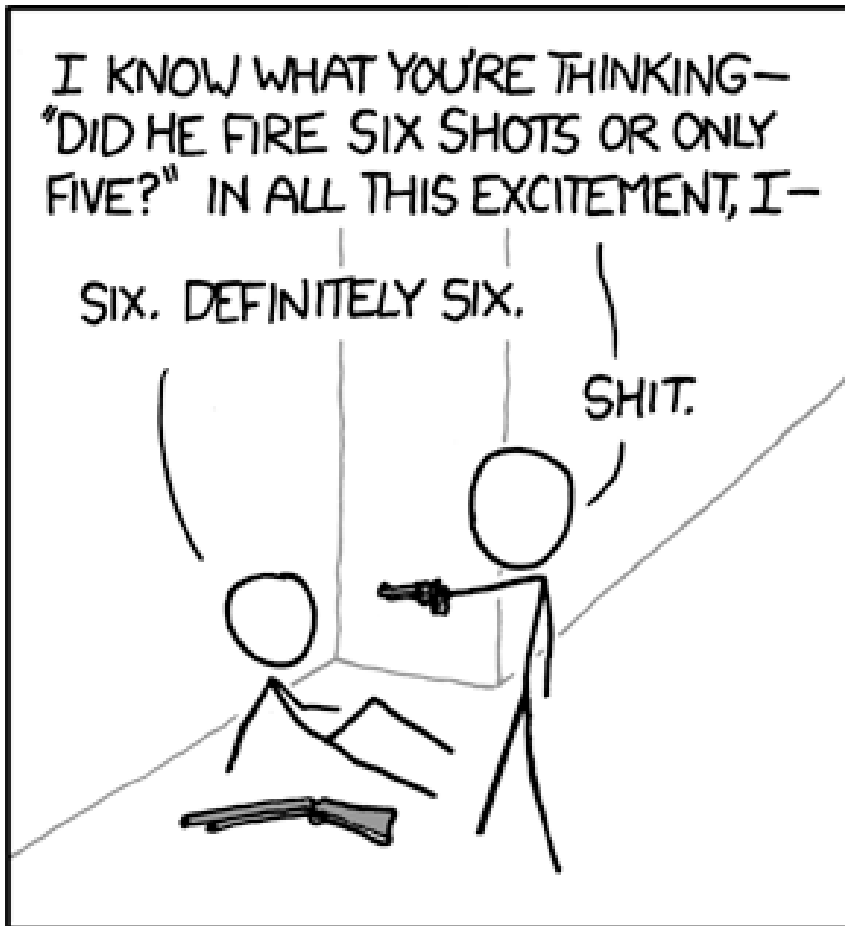
Randall's claims in the title text do check out. A high-density floppy disk with a FAT format holds about 1.4 MB of data, and has dimensions of $90 \times 94 \times 3$ mm, for a volume of about 25 cm^3 . A refrigerator carton is the large cardboard box that fridges are delivered in. A typical refrigerator carton may be $1800 \times 700 \times 700$ mm, a

volume of about 0.9 m^3 . So a fridge carton could hold about thirty-five thousand 90 mm floppies, or roughly 50GB. This is comparable to the storage on a single microSD card. A soda can ($500 \text{ ml} = 500 \text{ cm}^3$) could hold three thousand microSD cards or store 50TB of data (4500TB today). The iTunes store claimed to hold thirty-five million songs in Summer 2016, and allowing for about 2MB per song gives 70 TB of music. But the library would have been smaller in Spring of 2014 when the comic was created. As of January 2023, Apple Music had about 100 million songs, with much larger average file sizes of around 6 MB. That amounts to about 600 TB total, which is still far less than the 3000 TB that could fit in a soda can of microSD cards at the time. So Randall's claim seems to be correct.

There is a what if blog entry related to this topic.

#692: Dirty Harry

January 22, 2010



DIRTY HARRY MEETS RAIN MAN

Sci-fi has energy weapons because otherwise the people like me who watch it get distracted counting shots.

Explanation

The comic references *Dirty Harry* and *Rain Man*, two classic American films, from very different genres.

Dirty Harry is an action thriller about a police officer named "Dirty" Harry Callahan, who's notorious for being aggressive with criminals and quick to resort to lethal force. His weapon of choice is a .44 magnum revolver (which holds six rounds of ammunition). The comic references one of the most famous scenes in the film, in which Harry has a criminal at gunpoint, following a fire-fight. As the criminal considers reaching for the weapon he had dropped, Harry claims to have lost track of how many bullets he's fired, meaning that there may or may not be one round left in his gun, and coldly tells his opponent "you must ask yourself one question: do I feel lucky?". The implication being Harry will definitely fire if the man reaches for his gun, and his life will depend on whether there are any bullets left. In the original scene, the suspect surrenders himself rather than risk being killed. It's then revealed that Harry had emptied his gun, meaning that the other man could have 'won' the stand-off, had he managed to keep track of the shots fired.

Rain Man is a comedy-drama about the relationship between two brothers. One of the brothers, Raymond (AKA "Rain Man"), is autistic and has an eidetic memory. Several times in the film he encounters a number of objects that would be difficult for most

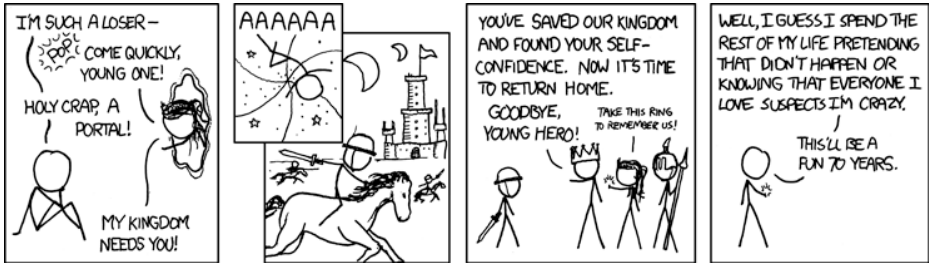
people to count (such as toothpicks spilled from a box) and immediately knows how many there are.

The comic portrays a mash-up between the two films, in which Dirty Harry faces Rain Man, instead of a less numerically gifted adversary. Rain Man accurately tracks every bullet fired, and knows that Harry's gun is now empty (with the implication that he can safely grab his own gun and kill Harry).

The title text implies that Randall tends to obsess about tracking quantities, even while watching action films, and thus gets 'distracted' keeping track of how many rounds each person fires. There's a long history in film and television in which scenes involving shoot-outs will have little rigor as to shots fired: characters will routinely fire more rounds that could realistically be contained in the gun, without ever reloading, to the annoyance of mathematically-minded viewers. Science fiction shows will frequently invent various forms of "energy weapons", which don't fire traditional projectiles, and therefore aren't limited to a specific number of shots (at least, not an identifiable number). Randall jokes that these energy weapons exist solely because "people like me" would otherwise get distracted counting shots (instead of the various other reasons, such as showing off a writer's or artist's creativity). The implication is that science fiction fans have a high percentage of people with obsessive, numerically rigorous tendencies who find such inconsistencies to be a distraction from enjoying the shows.

#693: Children's Fantasy

January 25, 2010



I was going to be a scientist, but that seems silly now.

Magical worlds exist. I've learned a huge truth about our place in the universe. I'm supposed to care about college? I mean, **FUCK**.

Explanation

Children's fantasy stories such as *The Chronicles of Narnia* and *The Phantom Tollbooth* involve a kid who is magically transported out of their time to some fantastic realm, goes through trials and becomes a hero, and then is returned to their own mundane world at about the same time they left with no one else realizing or believing what happened to them. The growth of the protagonist often involves learning self-confidence.

The comic illustrates this type of story and considers what the rest of the child's life would really be like as they reach adulthood. If they tell their friends, spouse, and family what happened to them, no one will believe them and these loved ones will think them a bit crazy. If they don't tell anyone, they are pretending that the episode never happened. Either way, it seems this would not be an enjoyable experience to live with for their entire adult life.

The title text continues the thought by pointing out the impossibility of contributing anything to the scientific world after visiting a magical world, as the child would know many scientific baselines, and, indeed, most regularly practiced scientific theory to be false, but would be unable to say anything or convince anyone of what they knew.

#694: Retro Virus

January 27, 2010



He says this is the year of Linux on the desktop! The world of Windows will fade any moment now!

Explanation

This comic uses the word "retro" as a reference to retro style and "virus" as a reference to computer viruses. This portmanteau is also a double entendre for a retrovirus, which is a type of actual biological virus which injects its genetic code into a cell and may wait several cell generations before triggering and multiplying.

Cueball finds himself needing to clean a virus off his Windows machine. Unfortunately, the registry editor (regedit), a key tool in manipulating Windows, is affected. A coworker comes over and mentions that it has been a while since he has worried about cleaning viruses in the Win32 API.

Cueball responds that Windows XP operating system is still the most popular (which it was in 2010, and remained until mid-2012), but is drowned out by another coworker (Ponytail) who exclaims that it is as if they are back in 2003. Back then, Windows XP machines were the standard in many places, and were far more often targeted by viruses than other systems, e.g. Linux, Mac OS X, etc.

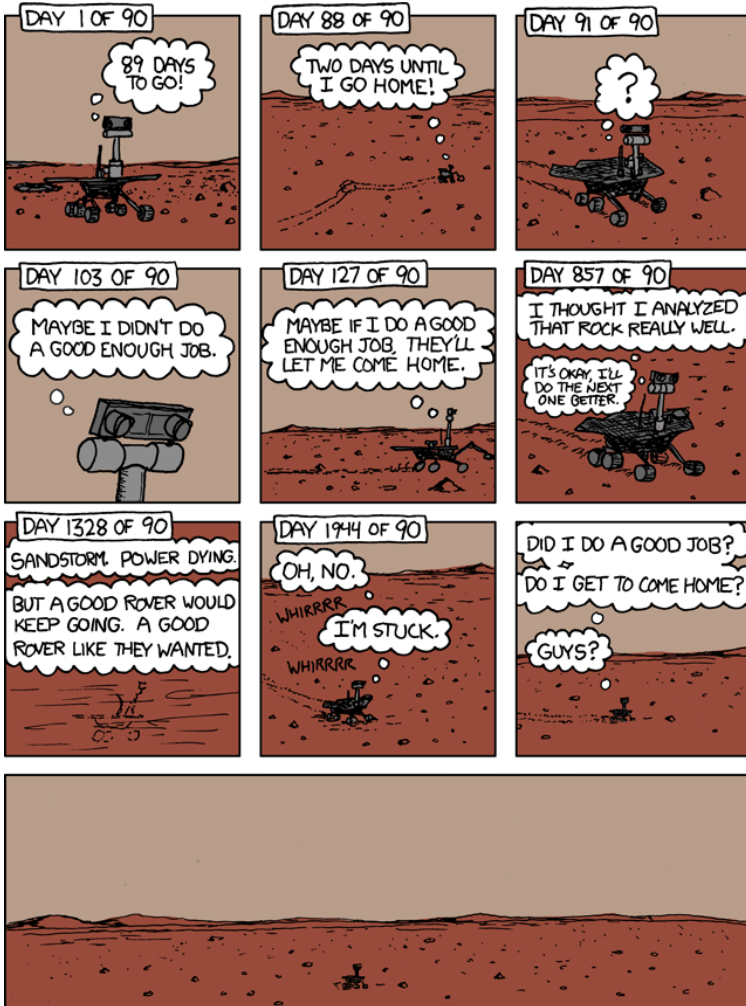
In the final panel, Cueball's coworkers continue to make fun of him by referencing things that were important back in 2003 like Howard Dean, Friendster or Kazaa. Such things have since fallen largely out of prominence.

The title text is a reference to the year of Linux on the

desktop, which is an expectation that in an upcoming year, Linux will make a large breakthrough and be widely adopted by businesses and personal users. The expectation has been around since about 2000, however, and has not exactly happened (although non-desktop devices running Android, a Linux-based OS, are now very common). If it were to happen, the large market share enjoyed by Windows OSes would fade away.

#695: Spirit

January 29, 2010



On January 26th, 2274 Mars days into the mission, NASA declared Spirit a 'stationary research station', expected to stay operational for several more months until the dust buildup on its solar panels forces a final shutdown.

Explanation

This comic explores what the Spirit rover's life would be like if it had a human personality. The rover lasted $5\frac{1}{4}$ active years on the Martian surface, far exceeding its expected mission duration of 90 Martian days. A sentient robot might assume that after its initially planned 90 Martian day mission was over, it would get to return home. This assumes, of course, that the rover never understood that the mission was a one-way trip, and that the expectation was that it would simply fail after ninety days. When no one comes to return it home, Spirit, possibly in a pun on its name, keeps its hopes alive while continuously analyzing rock after rock for years.

It would be cruelty of the absolute worst kind to abandon a human on an uninhabited planet with no intention of ever bringing them home,[citation needed] so it's horrifying when we see the rover in this way. It's a relief to us that the Spirit rover is just a programmed machine.

Opportunity, the rover's twin, lasted longer than Spirit and was shut down in February 2019 (2111: Opportunity Rover). More than five years after this comic, when Opportunity had passed a Marathon distance, Randall celebrated this rover with the comic 1504: Opportunity.

The title text has an apparent miscount: January 26, 2010, is more like sol (Martian day) 2156 by JPL's

mission status site, not 2274.

The final contact with Spirit was on sol 2210 (March 22, 2010).

The strip had a strong emotional impact on the fans of the rover, who created a number of alternative versions and endings for it.

In a blog post Randall mentioned this upbeat rewrite of the comic. Several others were made, including a silent one.

Many alternative endings were also proposed: some are sad, some sarcastic, some romantic, some look forward to the day when Spirit is finally recovered (this one was seen somewhere at CERN). Others imagine a future when the rover is not alone any more.

#696: Strip Games

February 01, 2010

FREQUENCY OF STRIP VERSIONS OF VARIOUS GAMES

$$n = \frac{\text{GOOGLE HITS FOR "STRIP <GAME NAME>"}}{\text{GOOGLE HITS FOR "<GAME NAME>"}} \\ (\text{AT THE TIME OF THIS WRITING})$$

FREQUENT ($n > 1\%$)	RARE ($1\% \geq n > 0.01\%$)	EXTREMELY RARE ($0.01\% \geq n > 0$)	NONEXISTENT ($n = 0$)
<ul style="list-style-type: none">• POKER• SPIN THE BOTTLE• BEER PONG• NEVER HAVE I EVER• TRUTH OR DARE	<ul style="list-style-type: none">• CHESS• BLACKJACK• TENNIS• SETTLERS OF CATAN• Pictionary	<ul style="list-style-type: none">• CRICKET• MAGIC: THE GATHERING• STICKBALL• AGRICOLA• JUMANJI	<ul style="list-style-type: none">• POOHSTICKS• PODRACING• ITERATED PRISONER'S DILEMMA• CHESS BY MAIL• CONWAY'S GAME OF LIFE

HOW ABOUT A NICE GAME OF STRIP GLOBAL
THERMONUCLEAR WAR?

Explanation

The frequency of strip versions of various games is measured by means of Google search results. Strip versions of popular games are a common activity at parties, especially when alcohol is involved. The obligation to remove pieces of clothing is supposed to add an extra zest to the game. A very widespread variant is Strip Poker, followed by strip versions of regular party games like Truth or Dare or Spin the Bottle.

However, the comic also suggests playing other games in a way that involves stripping. In reality, playing such games as "Strip Tennis" or "Strip Agricola" is rather unusual. The Chris Van Allsburg picture book *Jumanji* and the Robin Williams movie adaptation

Jumanji are about a magical board game that manifests dangerous creatures and traps from the jungle and lost civilization therein; a theoretical Strip *Jumanji* would probably not remain very titillating during the chaos (evidently, therefore, "strip *Jumanji*" refers to the real-life board game based on the movie).

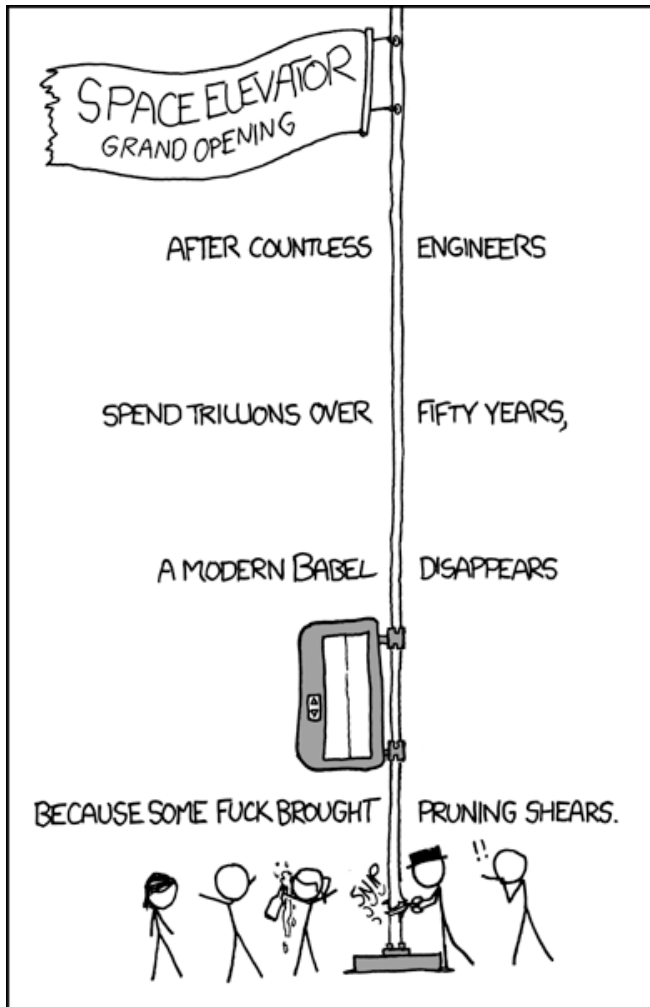
The last column features games of which strip versions are (according to Google) nonexistent. While the other columns named sports or board games where a strip variant would be at least conceivable, the last one includes the zero-player Game of Life and the Iterated Prisoner's Dilemma, which is a theoretical example in game theory. It is therefore left to the reader to imagine how a strip version of these pseudo-games would appear.

"Global Thermonuclear War" in the title text is a reference to the film "WarGames", where a young hacker accesses a US military supercomputer and starts a nuclear war simulation, believing it to be only a computer game. The film ends when the computer is shown that nuclear war is "a strange game" in which "the only winning move is not to play". The computer then proposes (on its all-caps screen): "HOW ABOUT A NICE GAME OF CHESS?"

Strip global thermonuclear war is a patently absurd idea; while it is a common trope for people to engage in one last moment of intimate pleasure before certain doom, foreplay (including strip games of any type) is a time-consuming practice, and time is something you don't have much of considering that the bomb could drop on your place of residence at any moment. Besides all that, the act of betting on which city is going to go up next in a nuclear inferno tends not to be an effective aphrodisiac for most people.[citation needed] But at least you wouldn't be wearing your radioactive clothes!

#697: Tensile vs. Shear Strength

February 03, 2010



Although really, the damage was done when the party planners took the hole punch to the elevator ribbon to hang up the sign.

Explanation

This comic is set in the future, where engineers have successfully constructed a space elevator, until Black Hat decides to cut the cable linking the ground and space using pruning shears. This demonstrates how tensile and shear strength are not the same. Tensile strength represents how hard you can pull on something without it breaking. Shear strength represents how hard you can try to cut it without it breaking. Many materials have great tensile strength but low shear strength (such as dental floss — try to break it by just pulling on two ends), including whatever this space elevator is made of. The material clearly has extremely high tensile strength because it can hold the elevator in place, with one end on the ground and one in space, but it can be cut with a simple pair of pruning shears. This also highlights the fact that "shear strength" and "shears" are etymologically related.

A space elevator is a proposed construction that would make space travel easier. It consists of a long string attached to the Earth (near equator) on one end and a counterweight (beyond the geostationary orbit) on the other end, kept taut and in one place by the gravity and centrifugal forces. This would make it possible to carry spacecraft into the orbit by simple mechanical means, as opposed to requiring the use of rockets as is the case nowadays, saving a lot of energy and resources.

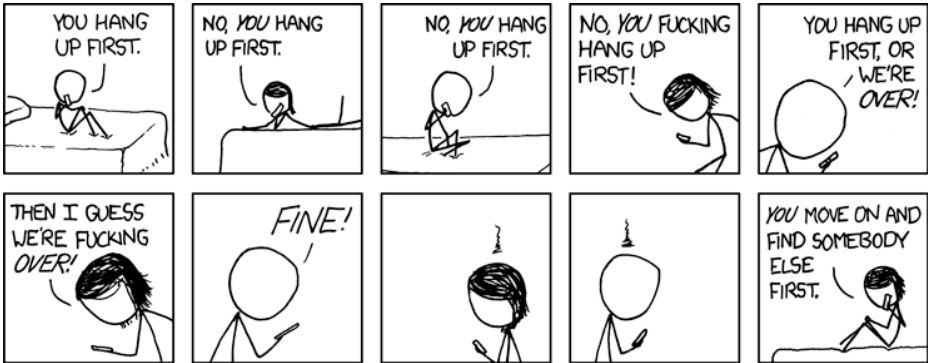
The phrase "a modern Babel" refers to the biblical story

of the Tower of Babel (later referenced in 2421: Tower of Babel), in which humans endeavor to build a tower reaching heaven. Their arrogance angers God and prompts him to sabotage the project. A space elevator can be seen as a modern equivalent of a tower to heaven. Additionally, the expression "a modern Babel" may be used figuratively to describe huge projects (especially buildings or human-made structures) that fail because they are too ambitious.

The title text makes the point that even before Black Hat cut the space elevator's ribbon-like cable in two, it was ruined by the holes in it for the banner. The holes would reduce the surface area of the cross section of the ribbon, reducing its ability to keep the elevator attached to the ground. The flag and holes would also potentially make it impossible for the elevator to travel up the ribbon, making the entire elevator useless.

#698: You Hang Up First

February 05, 2010



No, **YOU** stumble past a series of post-breakup hookups in a daze as you slowly realize what you've lost and how unlikely you are ever to get it back first.

Explanation

Telephone conversations end when someone hangs up.[citation needed] There's a traditional cliché of young romantic partners, both of whom are so besotted that they can't bear to hang up on the other. As a result, the end of the call devolves into a cycle where each one teasingly insists that the other one hang up first. It's a sweet, if somewhat mawkish display of how infatuated they are with each other.

As xkcd often does, this comic takes the cliché to its logical extreme with Cueball and Megan, by turning it into an argument resulting in their breakup. What's normally a cutesy game between lovers becomes a battle of wills, leading them to break up because neither is willing to back down. And then, even after they break up, both are still unwilling to back down, with Megan insisting that Cueball "move on and find somebody else first."

#699: Trimester

February 08, 2010



DID YOU KNOW YOU CAN JUST *BUY* LAB COATS?

Also, it's not like anyone actually calls up the Nobel committee to double-check things.

Explanation

While some pregnancies are different than others, a universal truth is that a naturally-born baby will always exit a woman's body through the vagina. However, in this comic, Cueball (wearing a white lab coat and holding a clipboard) tells a surprised Megan that until the second trimester (3-6 months into pregnancy), the baby has not yet decided on its method of egress and may choose any orifice through which to be born, including the mouth, anus, nose, etc. This does not happen in real life.[citation needed] The only case where a baby is not born through the vagina is during a Cesarean section procedure, in which a surgical incision is made in the mother's abdomen to remove the baby.

The caption reveals the truth: in fact, Cueball simply bought the lab coat, and is not a medical professional at all - he's likely just an average guy, and may well know less about medicine than Megan does. The moral is that you cannot trust someone simply because they outwardly present themselves as an authority.[actual citation needed]

Impersonating medical professionals, or other authorities such as police, does happen in real life, and is typically illegal. In the US and other countries, it is also against the law to practice medicine without a license, so Cueball is likely committing a crime.

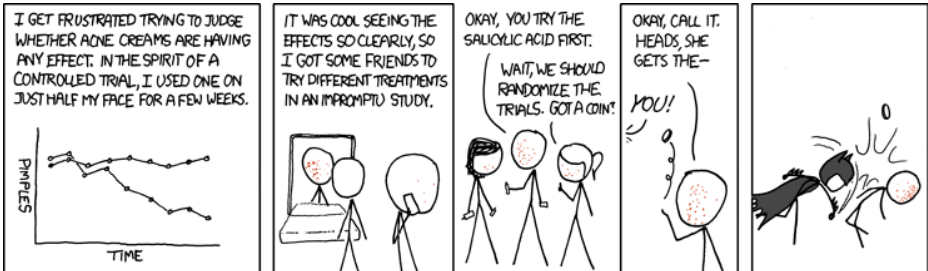
The expectation that a person in a white coat is a medical

expert, or at least a scientist, can be seen in the studies of the placebo effect: people who receive a "sugar pill" from a person who has the authority implied by wearing a lab coat will experience a greater placebo effect than those who receive identical pills from a person in ordinary clothes. This leads to more doctors wearing a white coat while working, and due to that a reinforcement of the expectation of white coats belonging to doctors. In some medical schools students receive a white coat as part of their graduation and qualification ceremony.

The title text implies also that in addition to faking being a doctor, he has also faked being a Nobel laureate, on the logic that most people will not bother to verify this claim. This is likely harder to get away with, as the Nobel Prize is an extremely prestigious distinction, and it would be unlikely for it to be awarded to someone with no recognized skill or experience in a given field.[citation needed]

#700: Complexion

February 10, 2010



Why do all my attempts at science end with me being punched by Batman? (P.S. benzoyl peroxide soap works great.)

Explanation

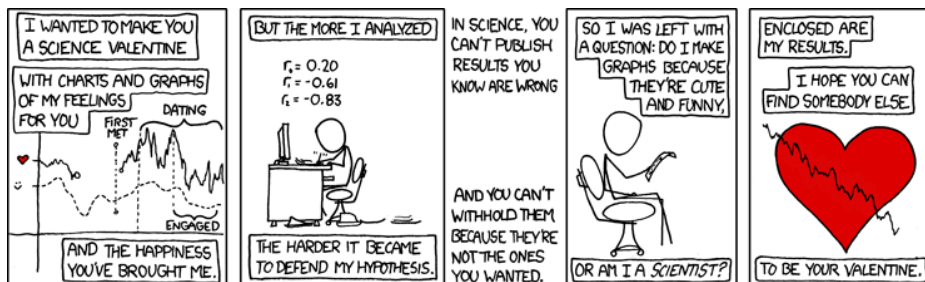
Cueball suffers from acne. Like many others afflicted with the same condition, he uses skin care products designed to treat acne. Unlike most other people, he does his own controlled trial by using them on only one half of his face and measuring the effects; the blemishes on the treated half of his face are noticeably diminished, while the untreated half remains the same, allowing him to isolate the effects of the cream versus the effects of time.

He convinces his friends to try the same experiment with different treatments so they can find out which works the best. In order to properly randomize the trials, he flips a coin. However, because half of his face is "scarred" (with acne blemishes), he's flipping a coin, and appears to be threatening someone with acid, he's mistaken for the Batman villain Two-Face. (Two-Face flips a coin to decide whether his victims will live or die, and was badly burned by acid on exactly one half of his face.) Cueball is subsequently punched by Batman; the title-text implies this has happened before.

Salicylic acid and benzoyl peroxide are both chemicals known for their skin care effects (salicylic acid in particular is also used to treat psoriasis).

#701: Science Valentine

February 12, 2010



You don't use science to show that you're right, you use science to become right.

Explanation

Cueball is taking a scientific approach to creating a valentine card. Based on the first chart, the recipient is his fiancée since he noted major events (first meeting and engaged, thus they are not married yet, or it should have been noted on the graph). The labels of a heart and smiley represent Cueball's feelings for her and happiness accordingly. This implies that Cueball had love and feelings for someone else before he first met the love he is breaking up with. While they were dating, the feelings and happiness levels were very unstable, as is expected for any new relationship. That later dropped to current levels, probably due to Cueball's lack of love towards her.

In the second panel, there are variables r_0 , r_1 , r_2 , each value at 0.20, -0.61, -0.83 accordingly. Given their names and values between -1 and 1, these are probably correlation coefficients. If they are based on the data in the graph in the preceding frame, they could compare how well one of the variables correlates with time passed since the relationship. For example, if they are based on the heart line, they could measure the correlation between heart (Cueball's feelings for his fiancée) and time, being a weak positive correlation for the first period (0.20), a moderate negative correlation for the second period (-0.61), and a strong negative correlation for the third period (-0.83). Alternatively, they could be comparing the correlation for the accumulated periods, 0.20 for the first, -0.61 for the first and second, -0.83 for all three. Either way, it looks like there becomes a strong

negative association between times passed and Cueball's love. The same reasoning would apply if the values are based on the smiley (Cueball's happiness) line.

The text in the space between 2nd and 3rd panels show that Randall Munroe is against scientific misconduct. It also shows that Cueball's rigorous approach makes him realize that the happiness he derives from the relationship is declining, which presents him with a choice. Will he be a true scientist by accepting data that he doesn't like, or will he be romantic and just make a cute card?

The last panel is a parody of a broken(torn) heart, a common symbol used to represent people falling out of love. The line could be interpreted as a graph of the amount of love between the two or a literal tearing of the heart in two.

He decides that he is a scientist and so presents his significant other with a breakup valentine even though he originally intended it as a confirmation of their love.

The comic may be intended as a cautionary tale to new scientists; while the graph in the leftmost panel shows an apparent correlation between Cueball's love and his happiness, and it shows his happiness is lower than it might be expected to be without his partner, it fails to show that the falling love affects falling happiness-- it may be the case that falling happiness effects falling love, or that both happiness and love are affected by an unidentified factor. For example, temporary external crises may be weighing on Cueball's relationship as well

as his happiness.

The title text seems to be him trying to console himself that he did the right thing. You should not use science to prove that your theory is right, but to find out which theory is the right one!

This is not the first time that Cueball has had relationship difficulties related to graphing, as shown in 523: Decline.

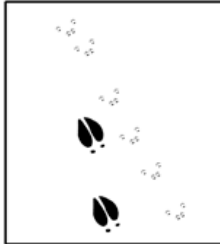
#702: Snow Tracking

February 15, 2010

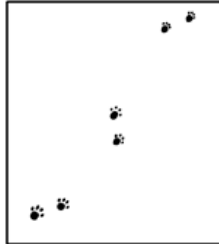
BACKYARD SNOW TRACKING GUIDE



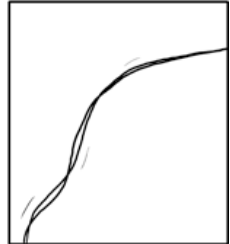
CAT



MOOSE AND SQUIRREL



LONGCAT



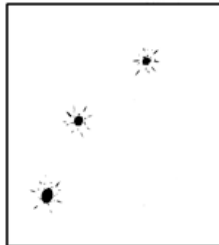
MOUSE RIDING BICYCLE



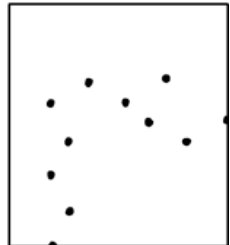
RABBIT STOPPING
TO USE HAIR DRYER



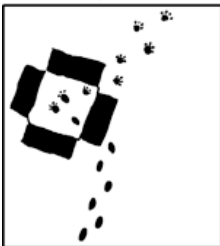
LEGOLAS



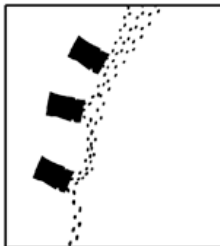
BOBCAT ON POGO STICK



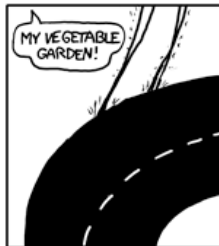
KNIGHT



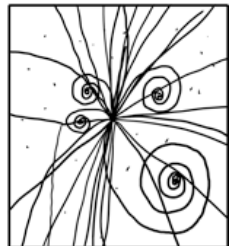
KID WITH
TRANSMOGRIFIER



KID WITH DUPLICATOR



PRIUS



HIGGS BOSON

I suppose that's more accurately a hare dryer.

Explanation

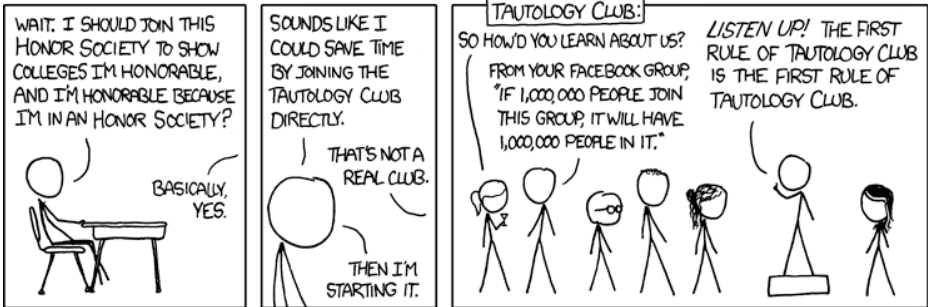
This comic is a guide to recognizing various animals by their footprints. However, the comic typically detours into strange, ridiculous or pop-culture-referencing footprints. In order:

- The first panel is nothing special. Just a regular cat.
- "Moose and squirrel" is a reference to the cartoon Rocky and Bullwinkle. Rocky and Bullwinkle were a flying squirrel and a moose, respectively, and were frequently referred to as "moose and squirrel" by the show's antagonist Boris Badenov.
- Longcat is an internet meme from pictures of cats all stretched out that make them look very tall (or long).
- "Mouse riding Bicycle" is a reference to Ralph S. Mouse, a series of novels by Beverly Cleary.
- The hair dryer has melted an irregular region around the rabbit. The title text is a pun on the Rabbit with a hair dryer frame, possibly an homage to Looney Tunes, where shows with Bugs Bunny would often contain a pun on the closely related term of "hare".
- Legolas is a reference to the character in the Lord of the Rings trilogy of books and movies. Legolas, as an elf, was so light-footed he could walk on top of snow, while the other races in his party were forced to trudge through it.
- The "Bobcat on pogo stick" panel is a possible reference to the character Bonkers D. Bobcat from Bonkers

- The "Knight" panel is a chess reference, as the tracks move just like the knight piece in chess.
- The "kid with..." panels are a reference to Calvin and Hobbes, a comic strip written by Bill Watterson. In it, Calvin has a pet tiger named Hobbes, and sometimes, a cardboard box that "transmogrifies" him to something else. In this panel we see tiger prints, meaning that Calvin became a tiger like Hobbes.
- The same cardboard box is now tipped on its side instead of upside down in the last panel. Now it functions as a duplicator, making multiple copies of whatever is in it. Calvin goes into it, duplicates himself, and they walk and duplicate again, and the cycle repeats.
- Prius is a reference to current events in which Toyota Prius's pedals have allegedly malfunctioned causing accidents.
- The Higgs Boson is an elementary particle which, at the time this strip was posted, had not yet been officially discovered (there had been detections at the Tevatron with 4 sigma certainty since the early 2000s). It was tentatively detected in March 2013 in the Large Hadron Collider. The "prints" in the snow in this case humorously resemble the tracks made by elementary particles following a collision of the kind used to search for the Higgs boson in a particle collider.

#703: Honor Societies

February 17, 2010



Hey, why do **YOU** get to be the president of Tautology Club-- wait, I can guess.

Explanation

Cueball has apparently been invited to join an honor society, but he considers the reason he should join to be a circular argument: because honorable people are in honor societies and people who are in honor societies are supposedly honorable. He objects that this is a tautology: a claim that something is true because it is true (and thus a meaningless claim). From this, he concludes that he might as well be in a "tautology club" and then starts one. Thus Randall mocks honor society clubs for being pointless.

In the final panel where Cueball has formed the club, Ponytail asks a new member (a Cueball-like guy) how he found out about them and he tells about their Facebook page. The reference to Facebook mocks Facebook groups whose names refer to a number of members they hope to attract (such as I Bet I Can Find 1,000,000 People Who Dislike Romanian Dog Abusers), usually ostensibly to raise awareness for some issue but perhaps in fact just for the ego-stroking pleasure of amassing a large number of followers. Tautology Club employs this tactic only for the sake of creating yet another tautology.

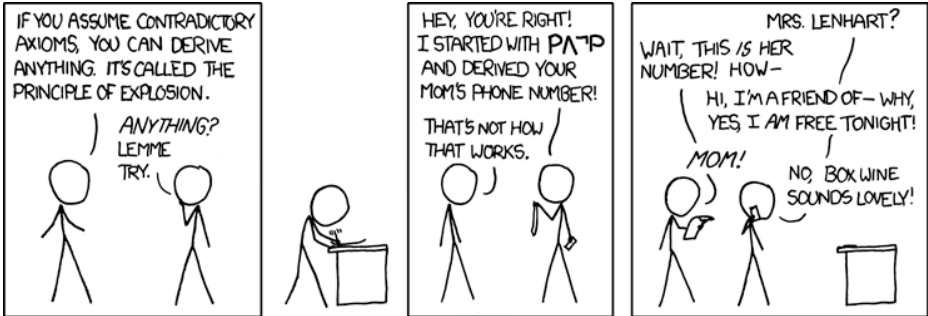
Cueball is listing the rules of the club from a podium. The phrase "The first rule of _____ Club" is a reference to the 1999 movie *Fight Club* (see also 922: *Fight Club*), which contains the famous line "The first rule of *Fight Club* is 'You do not talk about *Fight Club*,'" a reference to the club's intended secrecy. This phrase has

been appropriated for myriad other varieties and parodies, such as the one mentioned in the comic. The short guy with glasses could be Jason Fox from the FoxTrot comic (see the first two frames of 824: Guest Week: Bill Amend (FoxTrot).) Although it takes a little imagination to see, the hair, the height, the glasses, and the geek factor fit. Three of the other characters from the audience look like regular characters but with slightly different hairstyles than usual. There is a buzz cut version of Hairy, Hairbun, and Danish. Tautologies would be mentioned again in 1310: Goldbach Conjectures. Tautology Club was mentioned in 1602: Linguistics Club.

The answer to the title text would also be a tautology: he gets to be the president because he is the president.

#704: Principle of Explosion

February 19, 2010



You want me to pick up waffle cones? Oh, right, for the wine. One sec, let me just derive your son's credit card number and I'll be on my way.

Explanation

Cueball's friend (who also looks like Cueball) explains the principle of explosion, a classical theorem of logic, which shows that if within a system of logic you can use the axioms and rules of deduction to derive (prove) a contradiction, it then becomes possible to derive any statement at all within that system (whether it's actually true or not). In particular, if you start by assuming a self-contradictory statement, you can derive anything.

Cueball then proceeds to misinterpret (perhaps intentionally) that you can derive any fact about the physical world. His formula of propositional logic in the third panel reads " P and not P ", where \wedge is the formal logic symbol for "and" and \neg is the symbol for "not". P stands for a proposition. As " P and not P " is shorthand for " P is both true and false", this forms a contradiction from which the principle of explosion can begin. Humorously and to his friend's bewilderment he then successfully manages to 'derive' the phone number for his friend's mom.

After deriving the phone number Cueball instantly calls his friend's mom, who turns out to be Mrs. Lenhart. She asks Cueball out, without any preamble, to his friend's vexation. It does not get better when it is obvious that she wishes to drink "cheap" boxed wine with him, and Cueball is free tonight! There is definitely a hint of Mrs. Robinson over Mrs. Lenhart here.

In the title text we hear more of Cueball's (one-sided) conversation with Mrs. Lenhart. She asks him to pick up waffle cones, a variety of ice cream cone. And when he sounds bewildered by this she explains that it is for drinking the wine. This is probably not a very good idea, since waffles are typically not water proof and would also dissolve into the wine. The rest of the title text is just more of the main comic's derivation joke, since Cueball will take a second to derive her son's credit card number, so he can buy the cones at his expense.

In reality, Cueball really could start with the principle of explosion and "prove" a statement such as "Mrs. Lenhart's phone number is 867-5309", but the same could be said of any conceivable phone number, most of which don't actually belong to Mrs. Lenhart, and because his axiom system is inconsistent, he has no way of knowing which is correct. Likewise for his friend's credit card number. Much like The Library of Babel, an axiom system which can prove any statement might as well prove nothing. Perhaps Cueball already knows these phone and credit card numbers, and is just talking about the principle of explosion to mess with his friend.

#705: Devotion to Duty

February 22, 2010



The weird sense of duty really good sysadmins have can border on the sociopathic, but it's nice to know that it stands between the forces of darkness and your cat blog's servers.

Explanation

This comic is a reference to the 1988 movie *Die Hard*, where several supposed terrorists have taken hostages inside the fictional building Nakatomi Plaza. They take over the building, and cut all communication to prevent anyone communicating with the outside world. The goatee that the man has is a reference to Hans Gruber, the main antagonist in *Die Hard*. In the original movie, NYPD detective John McClane (who was in the building at the time) famously climbs through ventilation ducts and walks across broken glass. A major plot point is that the antagonists communicate through radio, just like this comic. In the original movie, he kills many of the antagonists and manages to rescue most of the hostages, foiling their plan in the process.

However, in this comic, instead of freeing the hostages, the individual mentioned instead reconnected the servers to the outside world. The person on the other end of the phone, immediately recognizes the reason: the man that entered the building is a sysadmin (short for system administrator), and he is concerned that his servers are losing uptime, or time spent running or connected to the internet. This evidently concerns the man on the phone, who knows that a good sysadmin is an unstoppable force once started.

The title text is a simple joke about the fact that the sysadmin will crawl through broken glass and defeat criminals/terrorists just so a cat blog (where owners write

about their cats) can stay up. This creates a humorous contrast between the seriousness with which large websites treat issues like uptime and business continuity and the often mundane and banal uses people actually have for them.

A sysadmin is also mentioned in the title text of 309: Shopping Teams and in 1305: Undocumented Feature.

#706: Freedom

February 24, 2010



Sometimes I'm terrified to realize how many options other people have.

Explanation

Cueball on the left, here most likely representing Randall as given in the title text, comments on the absence of physical enforcement for social norms. He tells his friend that he is sometimes shocked to realize how many options he has. Cueball then goes through a list of possible things he could do that only his conscience and learned social norms (and his cerebrum) prevent him from doing, including stripping naked, taking a plane to Fiji or just punching his conversation partner for no reason at all, with all the "interesting" ensuing events that would result, potentially life changing (he could go to prison for instance).

Cueball continues, explaining that he does understand the mental rules and also the reason, but also that at least once in his life he should exercise that "freedom", hence the title. This is enough to convince his friend who promptly exercises his option to punch Cueball in the face, perfectly in keeping with Cueball's beliefs of how everyone should do so at least once.

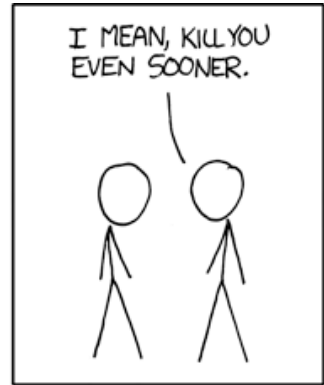
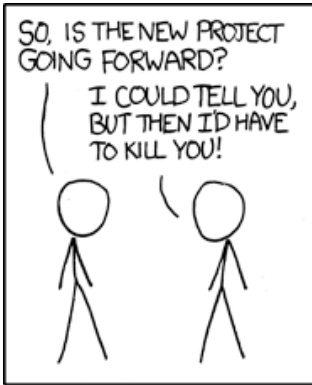
On the ground, Cueball remarks that he should have expected this reaction. That he didn't was the beauty of it all, his friend states, because only when the "freedom" is used to do something completely unexpected could the person doing so denounce his mental ruleset.

The title text is a restatement of the first line of the comment, but reversed to show that Randall is terrified

about his realization that the same freedoms apply to other people. This is justified by the comic, as some of these people could engage in actions detrimental to others, as Cueball's friend demonstrates; combined with the fact that there are many other people,[citation needed] that makes for a lot of unpredictable possible situations.

#707: Joshing

February 26, 2010



You'll be moved up from ~~49~~ of 7 billion to ~~31~~ of 7 billion.

Explanation

"I'd tell you, but then I'd have to kill you" is a flippant response to a question that's been around at least since the movie *Top Gun*, and has entered regular use in the English speaking world. The implication is that the question being asked is part of a secret so fiercely guarded that anyone who learned about it without authorization would be killed to prevent the information from spreading. This is generally understood to be such a comically exaggerated level of secrecy that no one would take it as anything but a joke.

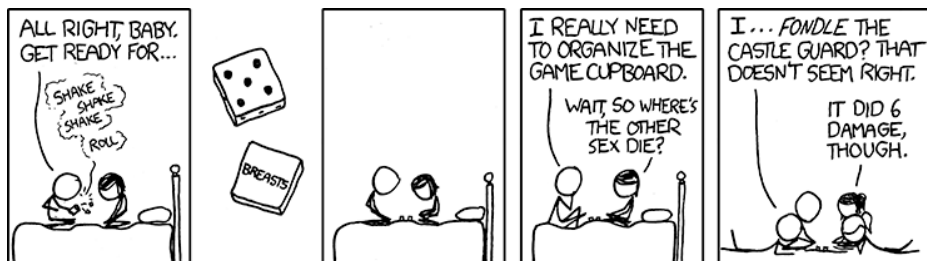
The Cueball who uses the line here follows it up with "I mean, kill you even sooner". This doubles down on the premise, implying that whatever he's working on will result in the other person's death. Hence, he's going to die either way, but if he learns any details of this mysterious project, he'll be killed earlier than he would have otherwise.

According to the title text, he'd go from #49 on his hit list (which apparently includes an approximation of the entire world population) to #31. This implies that a) the project is so deadly that it's expected to result in the deaths of most of the people on earth and b) he's expected to be among the first casualties of the project in any case.

The title 'Joshing' refers to the colloquial American verb 'to josh', meaning to joke with.

#708: Sex Dice

March 01, 2010



You roll for initiative, and ... [roll] ... wow, do you ever take it.

Explanation

Sex dice consist of two dice, one listing various actions, and one listing various body parts (sometimes a third specifying a manner in which the action should be done). Roll the dice, do the specified action to the specified body part, repeat as necessary.

Because most games require the same dice, in many peoples' game collections, the dice get mixed around between games. Unfortunately it seems Cueball and Megan have accidentally exchanged one of their sex dice (the one that contains actions) with a normal six-sided die; as a result, the people playing a role-playing game in the last panel find themselves doing unusual actions.

Given the situation, it's likely the player who fondled the guard was supposed to roll 2 or 3 six-sided dice to determine the damage of his attack. The sex die came up as "fondle," while the other dice added up to six; hence, he fondled the guard for 6 damage.

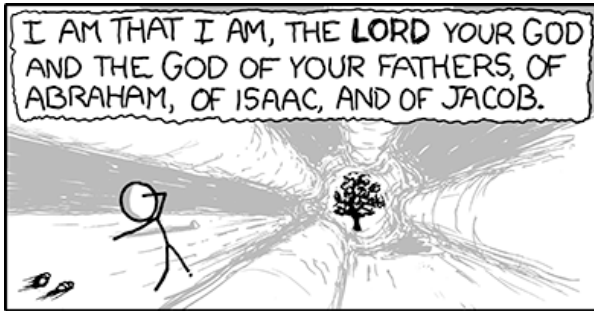
The title text is another possible situation that might arise: "rolling for initiative" in role-playing games is how the players determine who attacks in what order during combat. Here, the player rolled the sex die as part of his initiative roll, and therefore "took initiative" in an entirely different way.

Typically the missing sex dice will show different actions like these: Blow, bite, nip, lick, pat or suck (from a set

that did not include fondle). The other dice with places on the body like breasts might also have these options: Ass, thigh, ear, navel or lips. Other dice may show positions to use, like doggy style, or places in the house on which to perform these, as in the kitchen. It is a little difficult to imagine any of the actions mentioned above resulting in the response in the title text: Wow, do you ever take it. Examples of commercially available dice [here](#).

#709: I Am

March 03, 2010



Great, LO-M. Do you speak Bocce? I'm supposed to find one that speaks Bocce.

Explanation

In the Book of Exodus in the Hebrew Bible, God announces his presence to Moses by way of a burning bush. The quotation in this comic is a combination of Exodus 3:14 - "I am that I am", and Exodus 3:16 - "I am the God of your father, the God of Abraham, the God of Isaac and the God of Jacob."

The punchline comes when God introduces his "counterpart, R2-D2", implying that the "god" in this case is not actually the God of the Jews as expected, but rather C-3PO, a droid from the Star Wars universe; theoretically, in the mind of the reader, God's voice might humorously go from booming and sepulchral in the first frame, to snooty and British in the second frame.

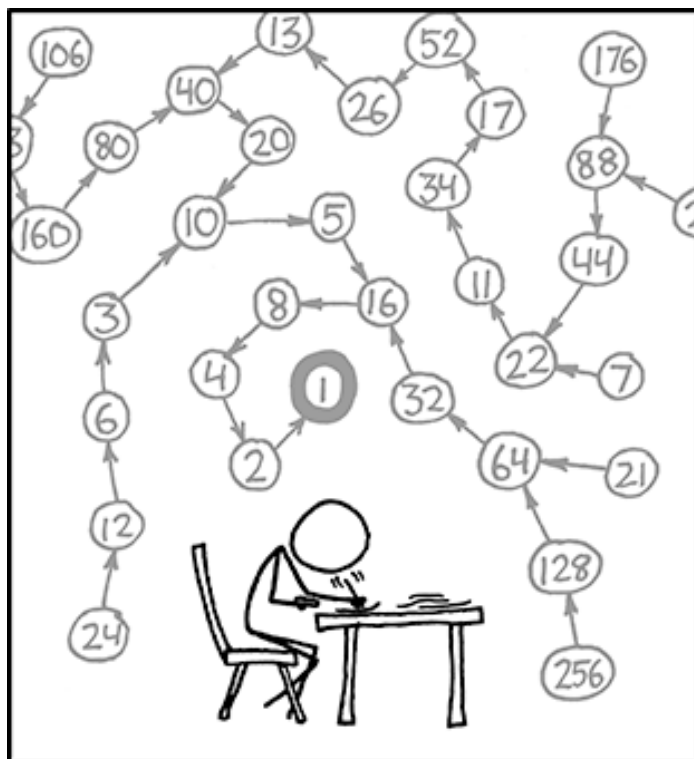
It could be a reference to a plot point from Return of the Jedi, in which the Ewoks believe C-3PO is a god. (In the movie, C-3PO states that it's against his programming to "impersonate a deity", but he does so anyway; whether it's actually a violation of his programming is debatable.)

The joke is that "I AM", the name of God in the Bible, is represented in Hebrew by the Tetragrammaton, YHWH. This abbreviation coincidentally[citation needed] follows the 4-character naming convention of Star Wars droid characters such as C-3PO and R2-D2 and, like the latter, contains identical characters in the 2nd and 4th positions. (In English translations of the text, this is the part rendered as "LORD" in capitals.)

In the title text, "LO-M" refers to the LOM, a model of protocol droid in the Star Wars universe similar to the 3PO model; "L-O-M" sounds like "Elohim", a Hebrew word for "God". Bocce refers to a language that Owen Lars wanted his protocol droid to be able to speak; C-3PO claimed that it was "like a second language to me".

#710: Collatz Conjecture

March 05, 2010



THE COLLATZ CONJECTURE STATES THAT IF YOU PICK A NUMBER, AND IF IT'S EVEN DIVIDE IT BY TWO AND IF IT'S ODD MULTIPLY IT BY THREE AND ADD ONE, AND YOU REPEAT THIS PROCEDURE LONG ENOUGH, EVENTUALLY YOUR FRIENDS WILL STOP CALLING TO SEE IF YOU WANT TO HANG OUT.

The Strong Collatz Conjecture states that this holds for any set of obsessively-hand-applied rules.

Explanation

The Collatz conjecture is a longstanding unsolved problem in mathematics. It states that repeating the sequence of operations described in the comic will eventually lead to the number 1. The description in the comic starts out accurate, then veers into the joke. The comic illustrates the sequence with a graph in which an arrow connects each number to its successor. For example, the number 22 is even, so the next number in the sequence is $22 \div 2 = 11$, and there is an arrow from 22 to 11. On the other hand, 11 is odd, so the next number is $3 \times 11 + 1 = 34$, and there is an arrow from 11 to 34. According to the caption, Cueball is obsessively writing out the graph by hand and is so preoccupied with the task that he has stopped socializing with his friends. He will be busy for a very long time, because the Collatz conjecture has been confirmed for all starting values up to 5×10^{18} .

In the title text, the Strong Collatz Conjecture is a humorous extension of the Collatz Conjecture. Some other mathematical conjectures and axioms also have normal and Strong variants, where the Strong variant gives a more general rule. This practice is further parodied in 1310: Goldbach Conjectures.

#711: Seismograph

March 08, 2010



PRO TIP: IN A PINCH, A LIE DETECTOR
CAN DOUBLE AS A SEISMOGRAPH.

The reverse only works if the subject has a nervous
twitch.

Explanation

A polygraph (popularly referred to as a lie detector) measures and records several physiological indices such as blood pressure, pulse, respiration, and skin conductivity while the subject is asked and answers a series of questions. The belief underpinning the use of the polygraph is that deceptive answers will produce physiological responses that can be differentiated from those associated with non-deceptive answers. Polygraphs are generally considered to be pseudoscientific and are not admissible as evidence. (They've been described as worse than coin toss to determine whether an individual is a trained double agent, for instance. The reasoning is that while the coin toss is [also] randomly incorrect about half the time, at least you can't train to beat the coin toss every time). However, they can be an effective prop to convince suspects that interrogators will know if they lie.

A seismograph is a machine which measures and records the ground's motion during e.g. an earthquake. Older seismographs held a pen against a slowly turning roll of paper, and ground motions were amplified and recorded as spikes in the pen line.

The lie detector works by measuring physiological signals which could presumably be visualized by drawing a line on paper like a seismograph. It is assumed that when someone is lying, their physiological signatures will be sharper and more stressed. In the comic, the character on

the right is hooked up to the lie detector, and apparently must answer "No" to the question of the earthquake. As long as there is no earthquake, then the subject will be telling the truth, and the polygraph signal will be more stable. But if there is really an earthquake happening, then the subject is lying, and so the polygraph will show sharper signals. This mimics the effect of an actual seismograph. It is not clear why the two characters seem to be upset with each other. It is perhaps because the scene mimics a polygraph test where the subject is trying to hide something. Or, more likely, they are simply panicked.

The title text considers the idea of using a seismograph as a lie detector. If the subject has a nervous twitch, presumably they will twitch in some way when they are telling a lie. This would require them to twitch hard enough to vibrate the ground around them, a vibration that can be picked up on a nearby seismograph.

#712: Single Ladies

March 10, 2010



Using a ring to bind someone you covet into your dark and twisted world? Wow, just got the subtext there. Also, the apparently eager Beyoncé would've made one badass Nazgl.

Explanation

The character in armor is Sauron, the main villain in The Lord of the Rings trilogy. In the backstory of the The Silmarillion, he takes control of Middle-earth by giving several Rings of Power as "gifts" to the great kings of men, dwarves and elves after teaching the craft to the elves. However, he also forged a master ring, the One Ring, to control the Rings of Power and ultimately rule over the kings. However, the elves were not deceived by his plan and took off their rings. Enraged, Sauron started War of the Elves and Sauron. After losing that war Sauron started a religion in Númenor. After using his influence to convince Númenóreans to attack Aman, the island is destroyed by Eru. Then Sauron started War against the Last Alliance. Sauron is eventually defeated in said war by Isildur who cuts off his ring finger. The books tell the story of a small group of adventurers who rediscover the lost Ring and attempt to destroy it, as Sauron's army gathers its forces to attempt to reclaim the Ring for their master.

Gil-galad is a high Elven-king, and Galadriel is an Elf of royal blood who serves as a matriarch of sorts to the remnants of the Elven race. Lindon is a location on the westernmost side of the continent, serving as the final transition point for Elves passing on to the Undying lands. Sauron refers to an actual event in the first panel, when he tried to gain control of Lindon through deceit; Galadriel and Gil-galad saw through his disguise and cast him out.

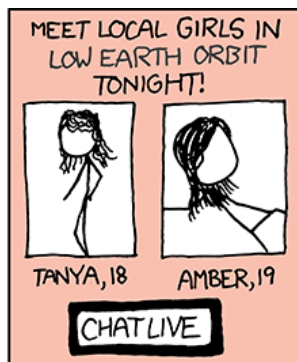
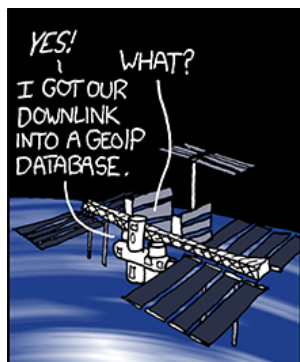
In the second panel Sauron is talking about Eru Ilúvatar, the creator in Tolkien's Middle-earth legendarium. While Eru created elves and men it was Aulë who created Dwarves, Eru gave them life. Orcs were Elves twisted by Morgoth so Sauron, being his principal lieutenant, would be a natural leader to orcs by the time he created the One Ring.

The song playing in the background is "All the Single Ladies" by Beyoncé, which includes the line "If you liked it then you should have put a ring on it," referring to wedding rings. This is shown as being what inspired Sauron to devise his plan to control others through the gift of rings.

The title text refers to an often-suggested fan theory that the One Ring is actually meant to be symbolic of marriage. This theory is incorrect. The Nazgûl, also known as ringwraiths, are the former nine human kings who were bound by the rings, now a band of nine servants to Sauron who constantly seek out the Ring for him.

#713: GeoIP

March 12, 2010



'Meet hot young singles in your mom's basement today? Man, screw you, GeoIP.'

Explanation

GeoIP is a service that converts IP addresses to their respective location on the Earth. This is done by looking up the IP address in a database maintained by various internet service providers. Advertisers often take advantage of the Jones effect by creating localized ads which misleadingly appear to be specific to your location, but are often generic advertisements featuring stock photographs with the name of a nearby settlement inserted into the text.

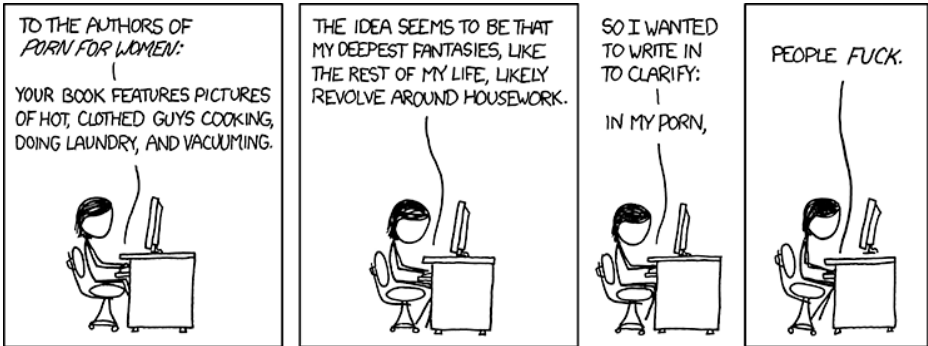
The comic satirizes this phenomenon. The International Space Station (ISS) has a high speed data downlink, but no direct connection to the internet. But here, Cueball trolls the advertisers from on board the ISS, by inserting his actual location on low Earth orbit into the database under that IP address. He proudly presents his result to Ponytail where the advertisements claim that there are "local girls" (one of whom vaguely resembles Danish) in low Earth orbit; a distance of roughly 420 kilometers above the Earth surface, and thus at least that far away from all other girls in the world if they are not on the space station (or a nearby spacecraft, such as one bringing supplies to the space station). The fact that the phrase "Low Earth Orbit" is slightly grayed out serves to illustrate that that location has been inserted into the generic advertisement.

The title text shows GeoIP has become so accurate that it can now pinpoint the user's location to his Mom's

basement. In United States, an adult living with his parents is considered shameful for that person, since it means that the adult does not have a job and cannot support themselves. The ads are typically of the form -- "Meet hot young singles in <user's location>" where the <user's location> part is filled in from GeoIP. In this case, the GeoIP is so accurate that it not just identifies that user is in his parents' house, but it also pinpoints the location that he's hiding in the basement, perhaps because he does not want to be seen by people visiting his parents. Thus GeoIP is unknowingly shaming the user by reminding him that he is in his mom's basement, and hence the "Screw you" response. However, this would also prove the false nature of these advertisements, as the user is unlikely to have not noticed any hot young singles currently sharing his mom's basement.[citation needed]

#714: Porn For Women

March 15, 2010



Yes, there are a lot of longing looks across the bridge of Galactica first, but that's beside the point!

Explanation

Porn for Women is a popular illustrated humor book that features exactly what the comic says.

There is an opinion that women especially dislike blunt porn that objectifies the people involved in the intercourse. The authors of the book follows this line, presenting an (arguably) more sexist porn, that instead has no sex but several images of extremely attractive men performing household chores. Megan objects to this, stating that her porn contains sex.

Galactica is the ship from the show Battlestar Galactica. Megan likely has a romantic attraction to some of the characters on the show, possibly involving "shipping" fanfiction.

#715: Numbers

March 17, 2010



The typical internet user (who wants to share) has an IQ of 147 and a 9-inch penis. Well, better than the reverse, I guess.

Explanation

This comic use the popular search engine Google to show how many hits (or web pages) are returned as relevant based on a given search replacing <X> by different numbers.

#716: Time Machine

March 19, 2010



We never see any time travelers because they all discover it's a huge mistake. This is also why your friend at the lab suddenly looked about a year older recently.

Explanation

Rob is about to discover time traveling, but a future version of him comes back in time and hits him with a baseball bat before he can actually build this time machine.

A common theme in time travel fiction is going back into the past to fix some mistake or stop some tragedy before it happens (see for instance *The Terminator* movies). In this comic, it is implied that Rob's time traveling turned out to cause a tragedy of some kind, so in order to stop it, Future-Rob must go back in time to stop himself from time traveling in the first place. The last panel supports this by suggesting that at least once a month somebody discovers time travel, but inevitably ends up going back in time to prevent themselves from doing so.

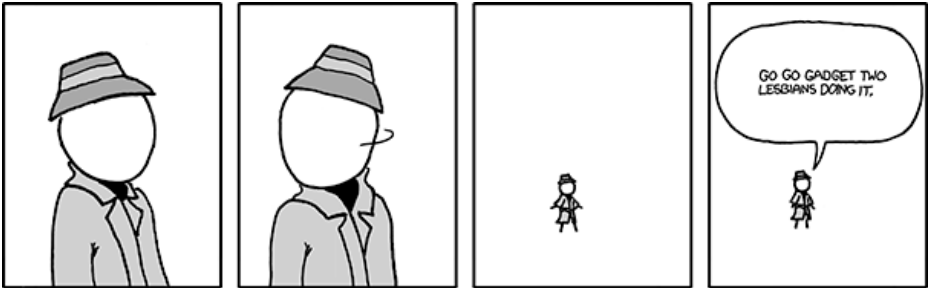
This is a plot point from the 2004 time-travel drama film *Primer*: one character intends to travel back in time to prevent them from discovering time travel in this way, and another character has already traveled back in time, drugged his earlier self, and taken over the operation to discover time travel before the narrative of the film begins. *Primer* has a notoriously complicated plot that Randall already has made a jocular attempt at explaining in 657: *Movie Narrative Charts*. Some more thorough attempts to explain it can be found [here](#) and [here](#). Doubtless, this has also been spoofed in countless other comedic settings.

The blood on the bat suggests that future Rob actually killed past Rob. This is of course a paradox like the grandfather paradox - but there are theories about how it would still be possible - see the link. The obvious paradox is that when Rob dies the future Rob never existed. But also the time travel Future Rob undertakes uses a technique that is now never invented. This was the reason for future Rob's travel.

The title text states that this is why we never see any time travelers since they would have stopped their own past selves from time traveling. After getting rid of their past selves they would then assume their place in the timeline, hence why a friend would suddenly look older: they have aged, just in another timeline before returning to the past.

#717: Furtive

March 22, 2010



... go go gadget video camera. Go go gadget cup.

Explanation

The person in the comic is Inspector Gadget from the animated series of the same name. Gadget was a cyborg detective that had access to a wide variety of gadgets which he would activate with the words "Go go gadget [insert item here]." The gadgets would usually spawn from his hat, such as his trademark personal helicopter ("go go gadget copter!"). One of the running gags of the series was that Gadget was completely clueless during his missions, and unbeknownst to him, relied heavily on the assistance of his niece Penny, her computer book, and her dog, Brain.

In this strip, Inspector Gadget (wearing his trademark hat and trench coat) looks around furtively and apparently moves away from the listener (or the camera pans out to reveal the empty environment) before saying the words "Go go gadget two lesbians doing it." In fiction, the fantasy of lesbians having sex is supposedly a common turn-on for straight men, although this has yet to be confirmed in real life.[citation needed] The command, given in the last panel of the comic, also serves to identify the person speaking. Identification along with the punchline is a common comedy trope.

In the title text, Gadget requests further gadgets: A video camera, to record the action, and a cup. The cup is probably a reference to the well-known, scatological pornographic video *2 Girls, 1 Cup*, which was prominent at the time the comic was created.

#718: The Flake Equation

March 24, 2010

[illegible]

Statistics suggest that there should be tons of alien encounter stories, and in practice there are tons of alien encounter stories. This is known as Fermi's Lack-of-a-Paradox.

Explanation

This strip parodies the Drake equation, which is a method for estimating the number of detectable extraterrestrial civilizations in our galaxy. The Drake equation starts with the best estimate for the number of stars in our galaxy, then multiplies it by successive probabilities (such as the number of stars with planets, the number of planets which can support life, etc), to ultimately calculate how many civilizations exist. While such a calculation necessarily uses speculative numbers, it gives a good sense of how many civilizations could potentially exist.

The Flake equation presented in this strip provides an estimate about how many false or fake stories about aliens are likely to exist. It does so in similar manner as the Drake equation, by starting with the entire population, estimating how many people are likely to believe that they've had an alien encounter, and then calculating how likely those stories are to become public. Just like in the Drake equation, exact numbers are unknown, but can be estimated, and the equation in the comic shows Randall's guesses about these values. See an explanations of values below.

"Flake" is American slang for a person who is casually dishonest or unreliable, implying that such a person would be likely to imagine an alien encounter. Note that, while the Flake equation includes people who imagine encounters "because they're crazy or want to feel special",

it doesn't attempt to include outright lies or deliberate hoaxes.

The final results tells us that there should be about 100,000 stories about aliens that have reliable explanations. (The numbers given in the equation gives 126,000 stories). The data is obviously highly speculative, and as with the Drake Equation, you can plug in your own numbers, but if you keep your guesses realistic, you will most likely get a very large number. This convinces the reader that the fact that there are many stories about aliens does not necessarily mean that many people actually met aliens.

The title text refers to Fermi's Lack-of-a-Paradox. The Fermi paradox refers to the contradiction between high numbers of calculated civilizations and the total lack of verified alien contact with earth. This is related to the Drake Equation, many estimates calculate that there should be large numbers of civilization in the galaxy, and they should have existed for long periods of time, suggesting that humanity should have been contacted by them, or at least seen some clear evidence of their existence. There are multiple explanations for this paradox, but it remains a question of scientific debate. The Lack-of-a-Paradox in this strip, however, is that the math suggests that there should be huge numbers of claimed alien sightings, and that's exactly what we observe.

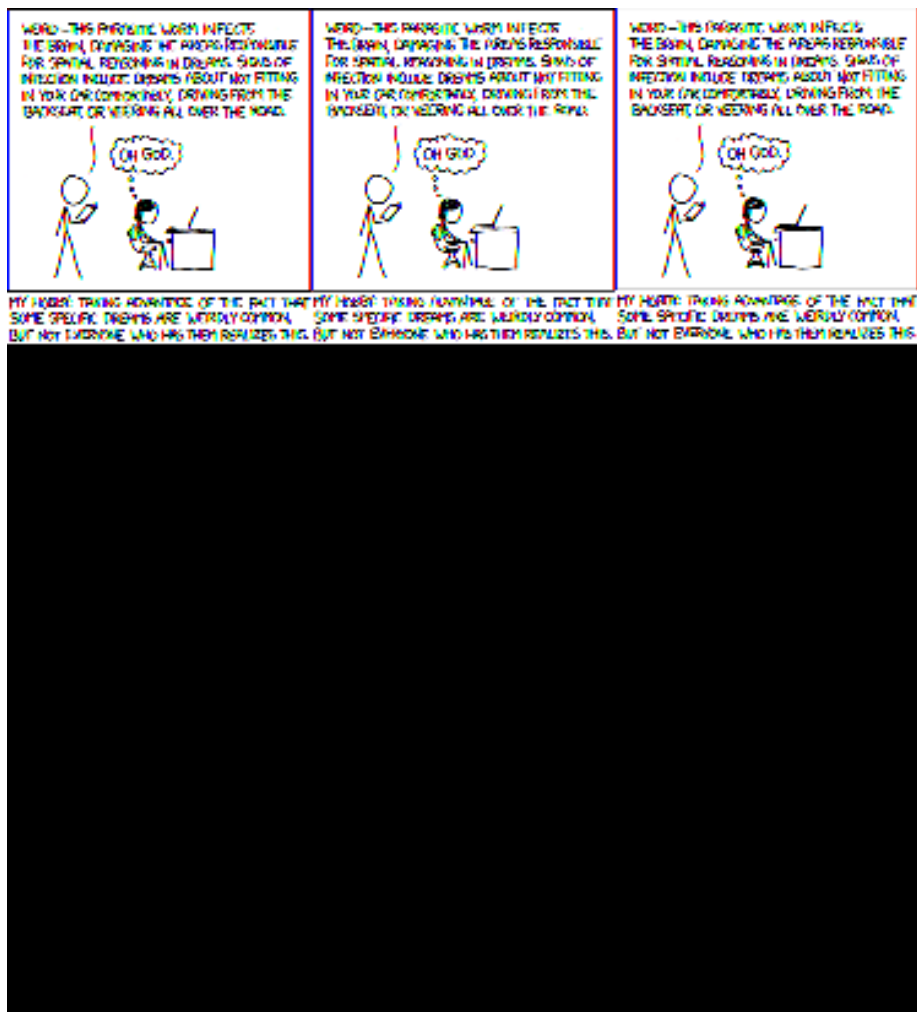
Another comic parodying this equation is 384: The Drake Equation. The credibility of paranormal reports in

general is revisited in 1235: Settled, which posits that if such phenomena were real they should have been unambiguously captured on camera by now.

Explanations of values[edit]

#719: Brain Worms

March 26, 2010



Hey, it says here that if you dream about your teeth falling out, it means they're spreading.

Explanation

This is another comic in the My Hobby series. Cueball is tricking Megan by pretending to read from a book about a parasitic brain worm, describing the apparent symptoms caused by an infection. The dreams described sound extremely specific, which leads Megan to believe that since she has been having these types of dream, she must be infected. The comic text asserts that these types of dream are fairly common however, and this knowledge can be leveraged to trick people who aren't aware of this.

Dream contents are likely to be affected by many factors, however because people share common thoughts, feelings and experiences in waking life, it is unsurprising that our dreams share common features. In the case of the comic, cars are a ubiquitous feature of life for most people,[actual citation needed] and for many driving or being a passenger in a car is a regular experience. It is therefore to be expected that cars are likely to feature in dreams. What is less logical, but still common is there being something strange about the situation. The car may be huge, tiny, backwards, upside-down, flying, underwater, non-descript, etc. The examples given in the comic are typical of the 'unusual factor' reported in dreams.

Some people believe (to varying degrees) that dreams may be interpreted as a representation of a person's thoughts, emotions, or their subconscious. One of the more

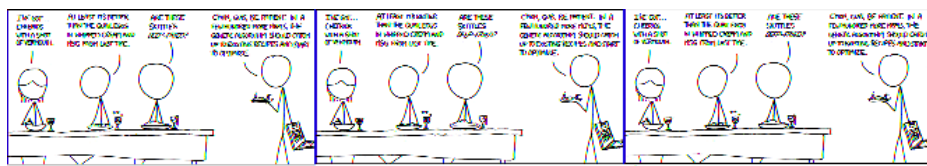
generally accepted interpretations of dreams involving driving or riding in a car, is that it expresses how you feel about your control over your own life. A dream about not fitting or not being comfortable in a car might be interpreted as the dreamer feeling out-of-place or uncomfortable in their own life, while dreams about losing control of a car might indicate the dreamer feels their life is out of control.

Megan of course does not have an infection from these fictional brain worms. Cueball is taking a "shot in the dark", with the success of his trick relying on Megan recognising these dream types as ones she has experienced. He may be playing on fears possibly carried by many people that these types of dreams hold a deeper significance which they can't identify. In the comic, Megan appears not to realize that he is pulling a prank on her and begins to get scared. Common dreams are also discussed in 1943: Universal Dreams.

The title text continues the joke with another common dream, this time about teeth falling out. One commonly accepted meaning of teeth falling out is a loss of confidence or power in one's life.

#720: Recipes

March 29, 2010



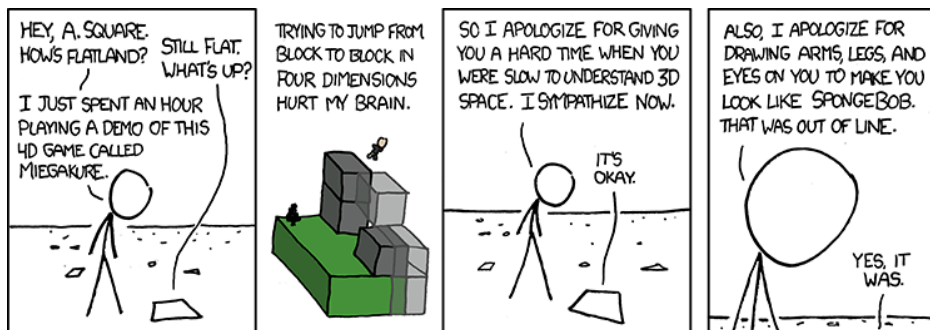
To be fair, the braised and confused newt on a bed of crushed Doritos turned out to be delicious.

Explanation

Explanation section not found.

#721: Flatland

March 31, 2010



Also, I apologize for the time I climbed down into your world and everyone freaked out about the lesbian orgy overseen by a priest.

Explanation

This comic is a reference to the satirical novel *Flatland: A Romance of Many Dimensions*, in which a society of flat shapes live in a 2D world -- a recurring reference in XKCD comics. Half the book is a direct satire of Victorian society, and the other half explores the experience of discovering a new dimension, where a sphere introduces a square (named A. Square) to 3D. Cueball appears to have taken the place of this sphere, and the comic takes place after the square knows the third dimension exists.

Humans will never fully be able to fully grasp the concept of a fourth spatial dimension (at least not in the foreseeable future), but there are ways of squashing or slicing four dimensions to create partial visualizations of 4D space. *Miegakure* is a yet-to-be-released 4D game that uses cross-sections of 4D space. Cueball attempted to play a pre-release version of it, but after having his "mind blown", he gained more sympathy for A. Square, who'd had similar trouble understanding 3D. A. Square accepts his apology.

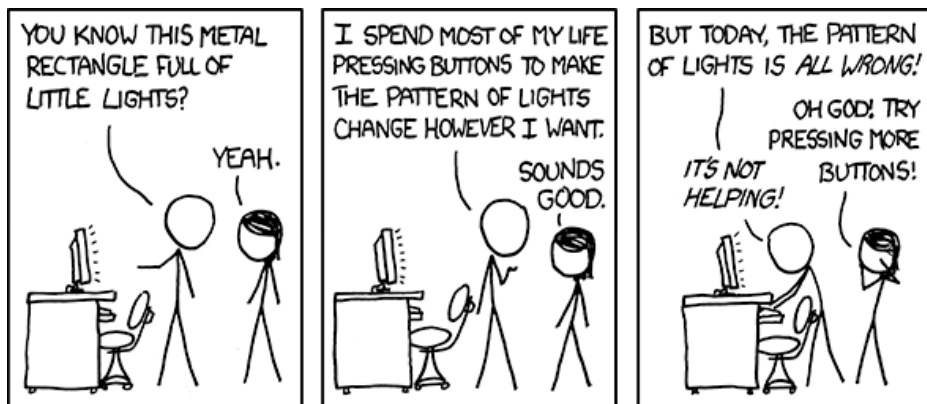
The joke here is that Cueball was being silly and drew lines on A. Square to make him look like *SpongeBob*, which did not make the square happy. Cueball apologizes again. It could also possibly be lethal as, in *Flatland*, it is shown that the flat surfaces of the shapes contain their organs.

The title text is a third apology for when Cueball crawled down into the second dimension. Being a stick figure, he is composed of a circle and straight lines.[citation needed] In Flatland, circles are priests (Flatland's highest social level. Actually, the highest aren't circles; in fact they are actually many-sided polygons that look identical to a true circle in Flatland.), and all women are lines; thus, to a watcher in Flatland, Cueball would look very much like a priest above many connected women, which may look like a lesbian orgy.

Also worth mentioning is the pun in the greetings: A. Square - being on ground level - asks Cueball above him how he's doing by asking what's up.

#722: Computer Problems

April 02, 2010



This is how I explain computer problems to my cat. My cat usually seems happier than me.

Explanation

Cueball explains to Megan that he is having computer problems. Normally, he is able to manipulate a "pattern" on his "metal rectangle full of little lights" (a reasonable, if oversimplified description of generated images displayed on a monitor). Today, however, the "pattern" is "all wrong". Megan suggests that he might be able to fix it by pressing more buttons, but following her advice doesn't seem to have the desired effect.

According to the title text, Randall uses a similar technique to explain his computer problems to his cat. Some cats have the habit to walk over or lie on keyboards (pressing a lot of buttons) or to lie on it (because keyboards of notebooks are designed to dispense heat, which many cats enjoy sleeping on). This is, however, not to fix a "pattern" which they usually don't care about but rather to get the same attention the keyboard receives from the cat's owner. "My cat seems happier than me," implies that "pressing buttons to make the pattern [of the 'metal rectangle full of lights'] change," makes a person less happy. Randall's cat is happier than he is because Randall's cat does not have to deal with computer problems.

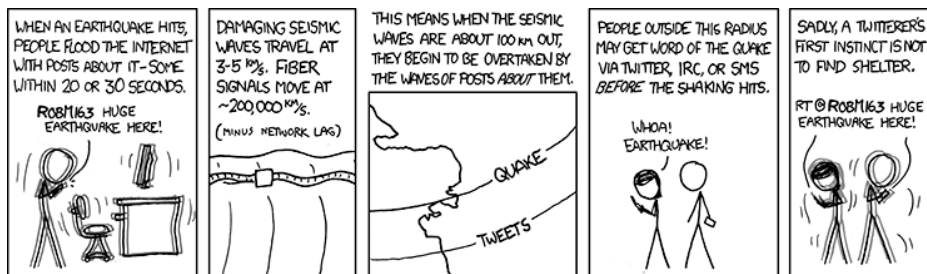
As evidenced by both past and future comics, Randall likes to make an effort to explain things for simple minds.

Speculatively, Randall may be commenting on the abstract nature of events that effect Cueball's happiness

or well being. While the work Cueball does on the computer seems very important to him, the deconstructed version as discussed by Megan and Cueball make his resulting distress seem out of proportion. This interpretation is further supported by the title text in which Randall's cat, unaware of more abstract representations of activity on the computer, enjoys greater happiness overall. 889: Turtles explores a similar theme.

#723: Seismic Waves

April 05, 2010



The USGS operates a really neat email/SMS earthquake notification service (earthquake.usgs.gov/ens/) that allows fine-grained control of notifications.

Explanation

One stereotype surrounding Twitter users is that they are more concerned with broadcasting their current status than they are with addressing it. Earthquakes are natural disasters caused by the movement of the Earth's tectonic plates, known for the destruction that they leave in their wake. The comic outlines the potential that technology can have in warning people about earthquakes, which is unfortunately negated by the tendency of the typical users of the technology to care more about sharing the warning message than they are to preserve their own lives.

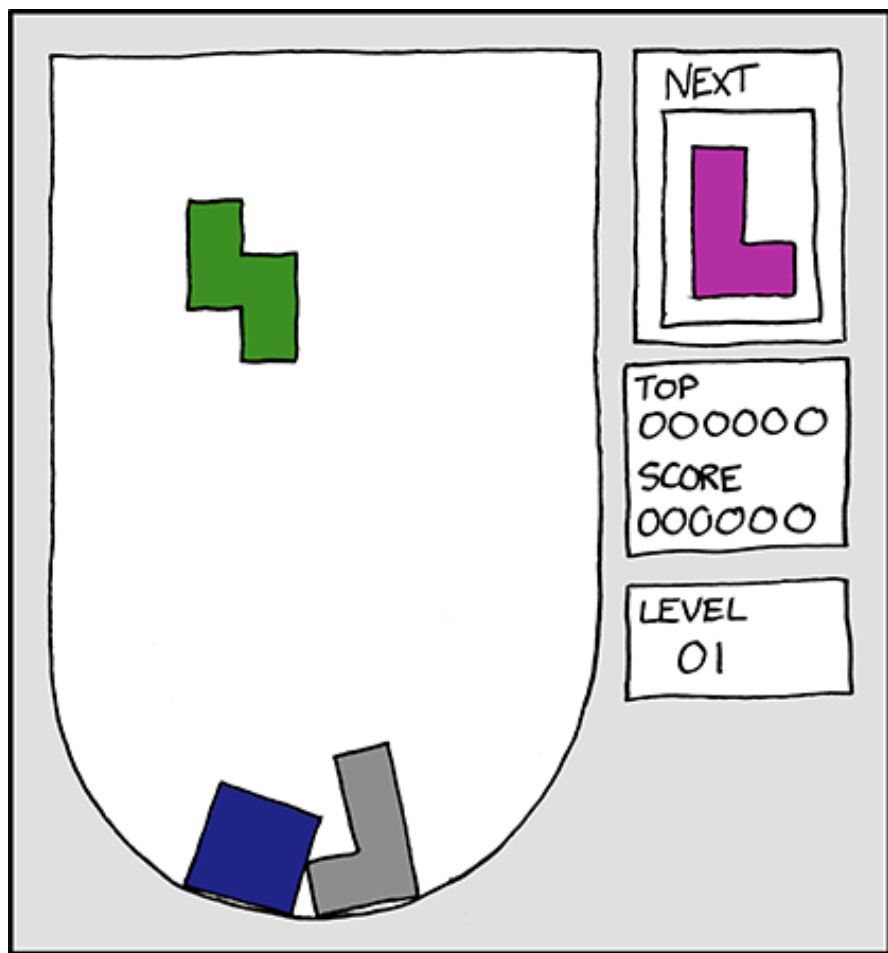
The title text is a geology pun, as "fine-grained" is a common term used by geologists to describe rocks.

Real scientists are trying to turn this speed difference into a practical tool. Go figure.

Nine years later they succeeded, as covered in 2219: Earthquake Early Warnings.

#724: Hell

April 07, 2010



HELL

There's also a Katamari level where everything is just slightly bigger than you, and a Mario level with a star just out of reach.

Explanation

Tetris is a game where the player has to manipulate falling blocks into forming complete rows, which will then be deleted and give points to the player. This comic is a play on this, presenting the player with a version of the game with a curved bottom that renders forming flat rows nearly impossible. Hell is a mythological and/or religious concept of a posthumous punishment for wrongdoers, depicted in many religions as eternal torment. Here the Tetris player feels they are in Hell when they try to play this game.

The title text presents similar situations where frustration is likely to occur. Katamari Damacy is a video game in which the player controls a sticky sphere which grows by assimilating objects smaller than itself, so gameplay would be extremely frustrating if none of the objects available is smaller than your sphere. Super Mario is a long-running franchise of platforming games; in some of the games (beginning with Super Mario 64), levels are completed by collecting large, golden Power Stars – so it would be very frustrating if one is impossible to reach.

There actually is a star in Super Mario 64 that is just out of reach in the A Button Challenge, where the goal is to minimize the number of presses of the A button. The star Treasure of the Ocean Cave is just 24 units too high to be reached without using the A button, and no alternative method has been found yet to get it without pressing A. As of February 16, 2023, this star has been

solved in 0.5 A presses, however, which means it only requires A to be held, and not pressed. Thus, in a full-game run, it can use an A press from earlier in the run.

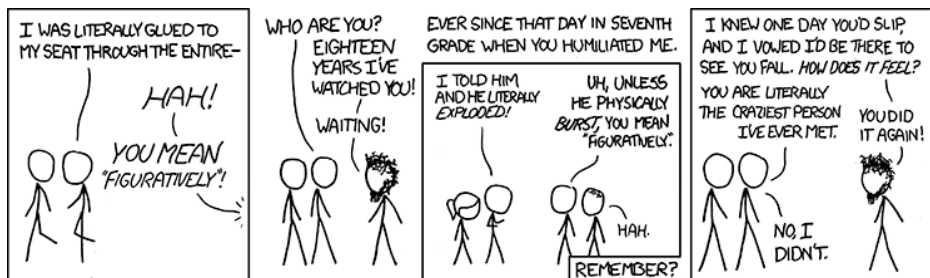
This last part may also be a reference to the Ancient Greek myth of Tantalus; as punishment for cannibalism, he suffers in Hades, confined to a pool with a fruit tree above it. As his punishment, the fruit branches on the tree recoil every time he tries to eat, and the water recedes every time he tries to drink.

Also see comic 888: Heaven, which presents an inverse situation in which the Tetris game provides unfairly perfect pieces to help the player win.

There is a playable version of this comic at Kongregate which, unsurprisingly, is frustratingly difficult (but not impossible) to play. Another playable version of the game with similar graphics experience and tweaked game design (has an Easy mode and challenge modes) is also released on Itch.io here.

#725: Literally

April 09, 2010



The chemistry experiment had me figuratively -- and then shortly thereafter literally -- glued to my seat.

Explanation

The adverb "literally" implies that the action it describes actually happened, while its opposite, "figuratively", is used when the action it describes is being used as a figure of speech, and is not a representation of what actually happened. However, "literally" is often used colloquially as an intensifier, to mean "really" or "very", and even though many dictionaries such as Merriam-Webster and Oxford Learner's Dictionaries state that this is a valid use of the word, many people object to this usage. It is noteworthy that these dictionaries try to catalog how words are used, not whether any one usage is more valid than another. Many might say it is more consistent to say a word such as "practically" for this usage.

In this comic, Cueball mentions he was literally glued to his seat, at which point a crazy man off-panel loudly corrects him. The crazy man declares that he has been stalking Cueball for eighteen years since an incident in seventh grade, when the crazy man (as a kid) used literally in the colloquial sense, and young Cueball corrected him. He felt humiliated and began to follow Cueball everywhere, waiting for Cueball to make the same mistake, presumably to save face.

When Cueball tells him that he is "literally the craziest person" he's ever met, the crazy man thinks that he is incorrectly using the word "literally" again; however, Cueball reassures him that he did not misuse it, meaning the crazy man actually is the craziest person he has ever

met. This is reminiscent of the title text in 1652: Conditionals.

The title text points out that a chemistry experiment gone wrong is one of the few things that could cause someone to literally be glued to their seat, having previously been figuratively glued to their seat in fascination.

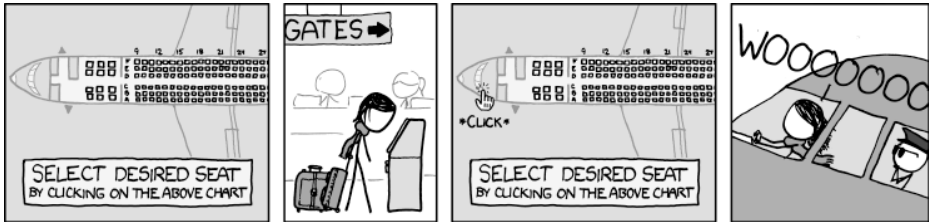
In this manner the title text could provide an alternative interpretation of Cueball's original sentence: "I was literally glued to my seat through the entire [chemistry experiment.]"

If this interpretation were correct, then the crazy person interrupted Cueball before he had a chance to finish his sentence, thereby never fulfilling his vow.

On a side note, if they were in seventh grade when Cueball corrected the crazy man's mistake, then Cueball and the crazy man are 30-31 (12|13 + 18) years old, approximately the same conclusion as in 1577: Advent.

#726: Seat Selection

April 12, 2010



Don't click on the wing.

Explanation

Many airlines give passengers the opportunity to select a preferred seat when booking a flight. In this case, Megan appears to be checking in at a self-check-in at the airport, where she is given the opportunity to select her seat. Rather than selecting a seat on the diagram, Megan clicks on the pilot seat (which is of course not an actual option for online seating reservations)[citation needed]. In the last frame, we see that, because she chose the pilot seat, she is now actually sitting in the captain's seat, flying the plane while whooping. A worried-looking pilot sits behind her at the back of the cockpit, holding both hands in front of his mouth in shock. While she is flying in a presumably fully-enclosed cockpit, her scarf rises behind her as if being pushed by a great wind. This is likely to show that she is piloting the aircraft recklessly compared to a normal pilot, as her scarf would only rise like in the comic due to a large amount of Gs being exerted on it.

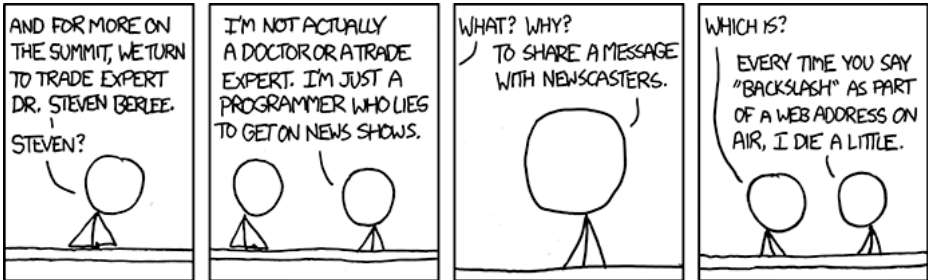
The title text says to not click on the wing. The implication is that if you did click on the wing you would, similarly, end up sitting outside on the wing. Even if you were able to hold on, this would put you above the Death Zone, which is at 7 km (See the what if? article *Rising Steadily*). Standard cruising altitude is 10 km (30,000-39,000 ft.). It would be an unpleasant death, as the air is so thin that you actually lose oxygen to the air (as explained in the mentioned what if?). 2862: Typical Seating Chart lists such wing seats as seating space

opportunities that are wasted by some companies and two wing seats at the extremities of the wings, for "lookout" purposes.

This kind of event could lead to situations as the one depicted in 1660: Captain Speaking. For this reason, 2862: Typical Seating Chart requests that non-pilots do not select the pilot seat(s).

#727: Trade Expert

April 14, 2010



I mean, it's been almost twenty years. Now, it's possible you're simply embedding Windows directory paths in your URIs, but in that case you need more than just a short lecture.

Explanation

Cueball as a news anchor has another Cueball-like character as guest in the studio, a doctor who is also a trade expert. However, Steven Berlee turns out to be a fraud. In reality he is a frustrated programmer willing to lie his way on to news shows to share his message with any newscasters willing to listen:

The slash character (/), also known as forward slash, is the correct way to separate distinct parts of a web address; for example in the address "[http://en.wikipedia.org/wiki/Slash_\(punctuation\)](http://en.wikipedia.org/wiki/Slash_(punctuation))", a slash follows the "org" and the "wiki". However, some newscasters are unfamiliar with the distinction between the different types of slashes, thus confusing the normal slash with the backslash (\), the wrong character. They may also be somewhat overzealous by trying to specify forward- or backslash since just saying "slash" would be sufficient. Also as mentioned in the title text the backslash is used in addresses on a Windows PC.

Steven Berlee claims that he suffers every time this mistake is made in a news program, explaining his reason for cheating his way on the air. Steven's name is most likely made up, as it seems to be taken from two or three of the inventors of the Internet:

- Dr. Steve Crocker who has worked in the Internet community since its inception. He was part of the team that developed the protocols for the ARPANET which

were the foundation for today's Internet and for this work, he was awarded the 2002 IEEE Internet Award. His real name is Stephen D. Crocker.

- Dr. Stephen Wolff, spelled differently than Steve, but the same as the real name of Steve Crocker. He is one of the many fathers of the Internet, mainly credited with turning the Internet from a government project into something that proved to have scholarly and commercial interest for the rest of the world. At one point he managed a research group that participated in the development of ARPANET.
- Sir Tim Berners-Lee's last name can be made into the portmanteau Berlee. He is an English computer scientist, best known as the inventor of the World Wide Web. Berners-Lee is the director of the World Wide Web Consortium, which oversees the continued development of the Web.

Searching the internet lists no one called Steven Berlee, and the only references point back to this comic.

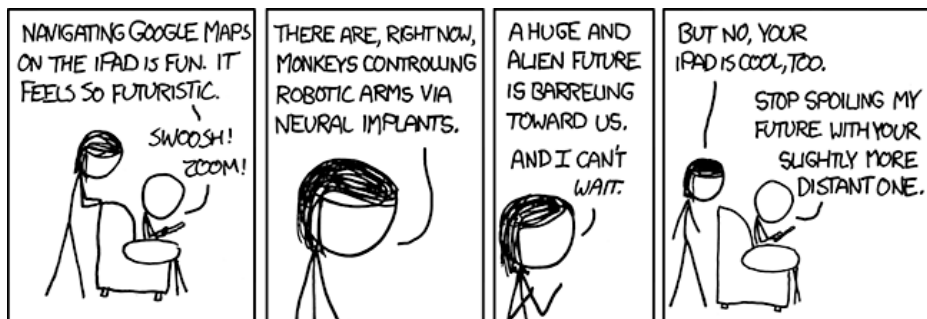
The title text refers to how in the Windows operating system, the backslash is actually used instead of the slash as a separator (in contrast to Unix-based systems, which use the forward slash). Thus, the path to any Windows file encoded in a URI (Uniform Resource Identifier — which may sometimes also be called a Uniform Resource Locator) would correctly contain the backslash character. It is possible to pass parameters, including strings, in an internet URI and so you could have an identifier that directly embedded the path of a Windows

file on a Windows server - this would be such a weird and terrible thing to do.[actual citation needed]

In the title text Steven complains that after having had the modern version of the Internet for 20 years (since early 90s and this comic was released in 2010) they should have learned the difference by now. He also continues to claim that if they do not understand the difference between an internet URI and Windows directory paths, and thus embedding these into their URIs, then he cannot help them with just a short lecture while he cons his way to time on the air.

#728: iPad

April 16, 2010



Maybe we're all gonna die, but we're gonna die in *really cool ways*.

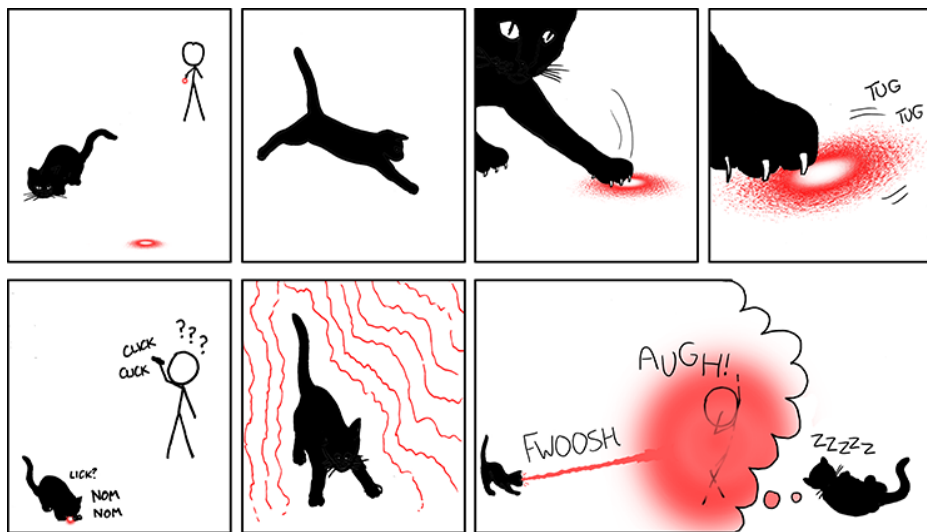
Explanation

In this comic, Cueball is entertained by his iPad (which came out a few days prior to this comic) by messing around with Google Maps because he thinks it feels futuristic. Megan tries to bring perspective to him by telling him that there are so many more futuristic things in the (possibly) near future. Cueball still objects, because that makes him feel that he's too easily impressed by trivial things, and says that Megan is spoiling his fun by trying to make his source of entertainment seem so mundane compared to "monkeys controlling robotic arms via neural implants".

The title text is showing how Cueball is, instead of being horrified by all the new ways to die technology could present, like a scientist, enthralled by the many newer ways that death could occur.

#729: Laser Pointer

April 19, 2010



It's a lasing cat-vity!

Explanation

It is common to use a laser pointer as a cat toy because cats are attracted to the dot and attempt in vain to catch it in their paws. They will chase the dot as it moves around, sometimes pouncing on it or swiping at it with their claws; but they will never be able to catch it.[citation needed] This is very frustrating for cats (and dogs), because it triggers a hunting instinct, but removes the satisfaction of actually catching their prey.

Cueball is messing with his cat with a laser pointer, however he is unprepared when his cat pounces and successfully grabs the laser dot. As Cueball looks around and tries to figure out what happened to the laser, his cat licks it, before eating it and starting to glow with a red light.

The cat then shoots lasers from its eyes and disintegrates a surprised Cueball on the spot in revenge for taunting it with the laser pointer.

It is then revealed that everything that happened was just a cat's dream. Only in its dreams can a cat successfully enact the rest of the comic.[citation needed]

The last panel where it is revealed that the rest of the comic shows the cat facing away from the reader, which may be meant to suggest that the cat is remembering real events

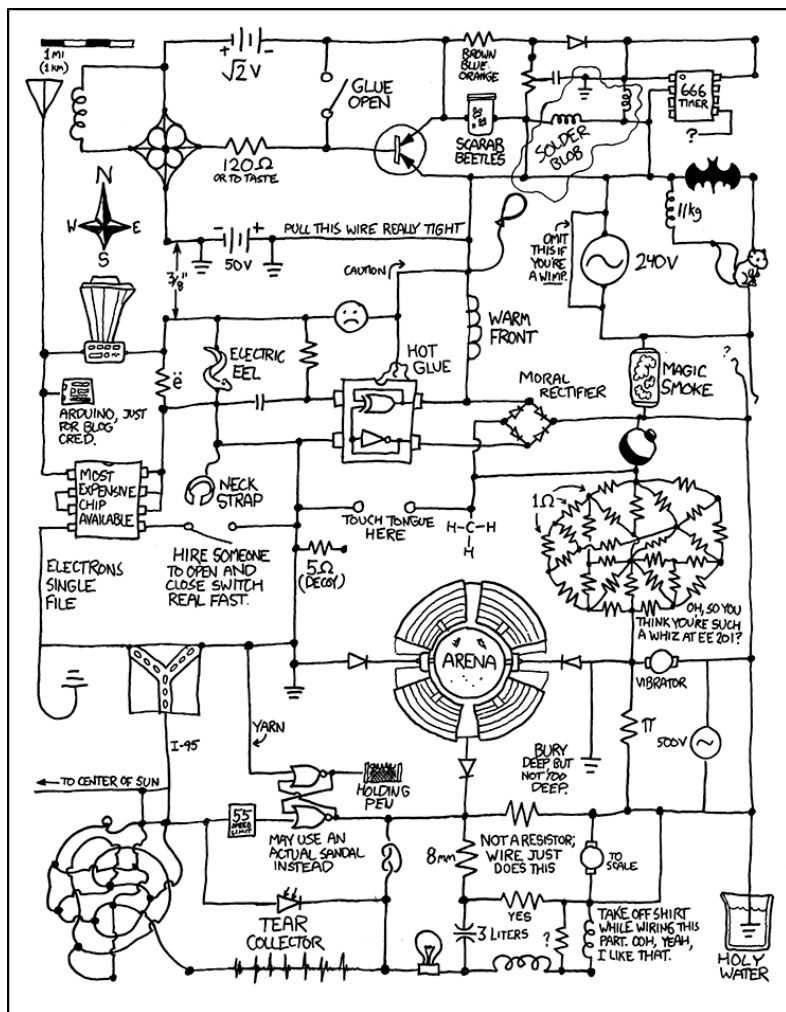
Real cats' eyes (and some other animals' eyes) have a

tapetum lucidum behind their retinas, which increases their sensitivity in low-light conditions. This can cause their eyes to appear to glow, but they're actually just reflecting light from the environment.

The title text makes a pun on the chamber in which lasers are formed, known as a laser cavity.

April 21, 2010

April 21, 2010



I just caught myself idly trying to work out what that resistor mass would actually be, and realized I had self-nerd-sniped.

Explanation

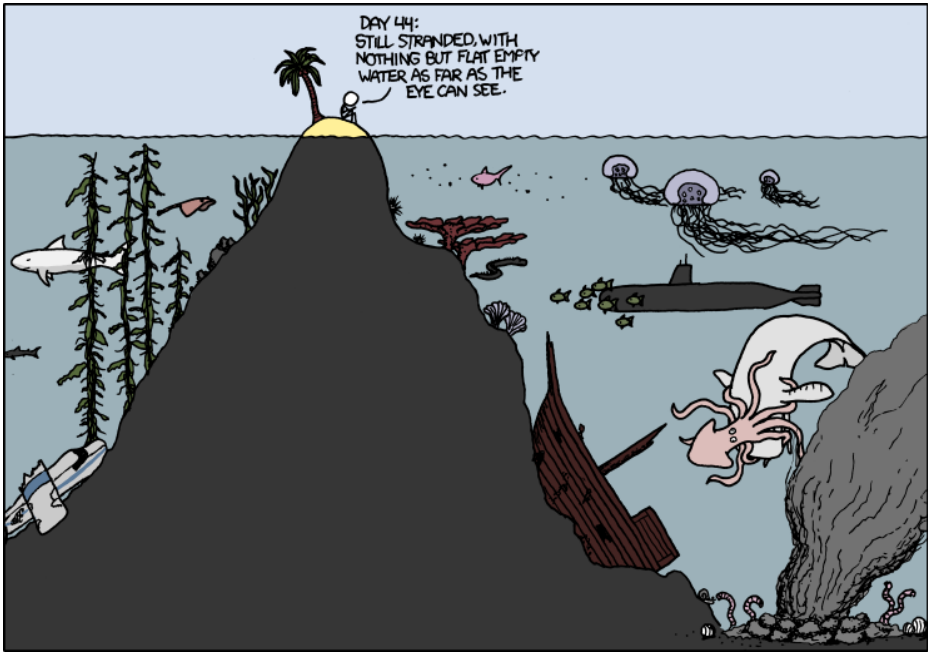
Another fine example of nerd sniping, as mentioned in the title text.

There are pieces of circuit diagrams, road maps, chemical diagrams, and other things all mixed in.

Explanations for each below!

#731: Desert Island

April 23, 2010



Telescopes and bathyscaphes and sonar probes of
Scottish lakes, Tacoma Narrows bridge collapse explained
with abstract phase-space maps, some x-ray slides, a music
score, Minard's Napoleonic war: the most exciting new
frontier is charting what's already here.

Explanation

This comic is making the point that there is a wonderful world waiting to be explored in the ocean. From above it seems so plain, endless, and boring. But underneath the surface lies the most unexplored area on the planet. This comic is a commentary on the need to head below the waves and start exploring.

Cueball sits writing in a diary on a desert island which is really a mountain of which only the sandy tip with a palm tree on it stands above the water. From his diary entry, it appears that he has been stranded on this island for 44 days, and only sees "flat empty waters" around him. The waters around him may be "empty", in that there are no other boats or coastlines around him, however, there are many objects below the surface.

Beneath the surface is:

- A kelp forest
- Three sharks
- A stingray
- An eel
- A shipwreck
- A submarine following a small school of fish (it should be noted that if Cueball tried, he could make contact with the submarine and get home)
- Three large jellyfish

- A giant squid fighting a sperm whale
- A crashed plane
- Coral formations
- A thermal vent emitting a plume of smoke surrounded by several annelids
- A snail

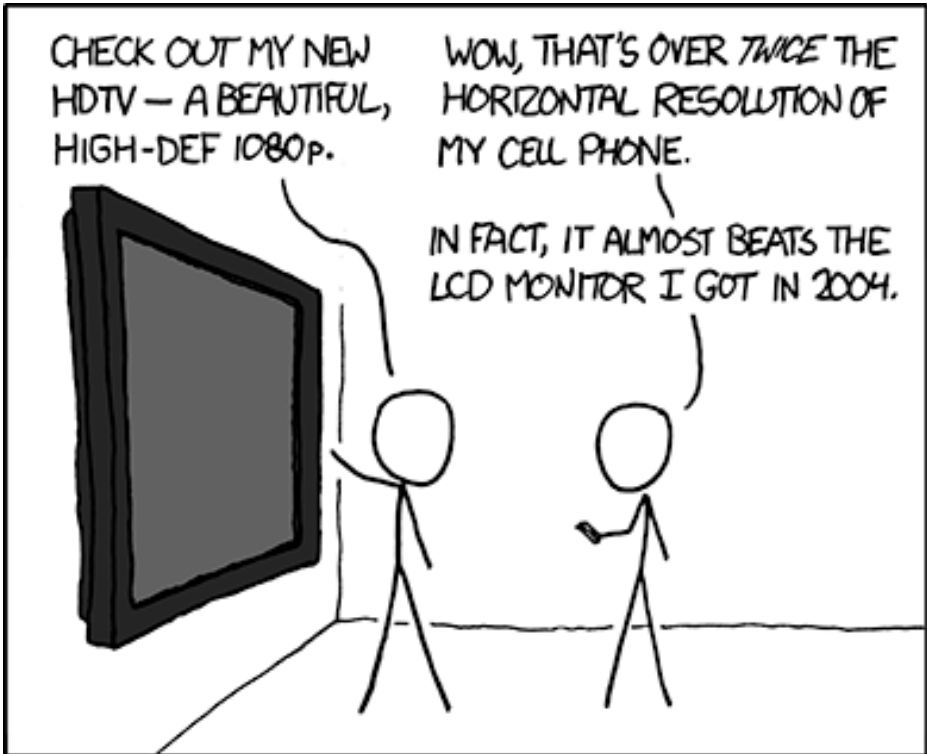
The most important items from the title text are:

- A bathyscaphe is a deep sea submersible: a submarine for exploring the ocean floor.
- Some Scottish loch are very deep, especially those in the Great Glen. There may also be a reference to the famous Loch Ness.
- The Tacoma Narrows Bridge collapsed when wind blowing over the bridge caused it to oscillate wildly. When the oscillations changed from one mode to another, they grew in amplitude until the bridge failed dramatically.
- Charles Minard did a visualization of the losses incurred by Napoleon's army in its attempt to conquer Russia.

The title text itself is a poem that can be sung to the chanting, rhyming tune of Billy Joel's hit We Didn't Start The Fire:

#732: HDTV

April 26, 2010



IT BAFFLES ME THAT PEOPLE FIND HDTV IMPRESSIVE.

We're also stuck with blurry, juddery, slow-panning 24fps movies forever because (thanks to 60fps home video) people associate high framerates with camcorders and cheap sitcoms, and thus think good framerates look 'fake'.

Explanation

This comic pokes fun at the differing standard between image quality for television sets and other electronic devices, even though both are based on essentially the same standards. When rating television sets, a 1080p screen, that is, a screen 1,920 pixels wide and 1,080 pixels tall with progressive scan, is considered impressive.

In comparison, high-end smartphones in late 2009/early 2010 had 480×800 resolution (with horizontal resolution of 1,920 pixels being more than twice of 800 pixels). As of the comic's publishing date, there had been even higher resolution monitors available (30-inch diagonal 2,560 by 1,600 pixels and 22-inch diagonal 3,840 by 2,400 pixels).

In 2004, common desktop monitors had WUXGA resolution of 1,920 wide by 1,200 pixels tall, which is how the TV "almost" (but not quite) has the same resolution as an upper midrange monitor would already have six years earlier.

Soon after the comic's publishing date in 2010, phones with long edge resolution approaching 1,000 pixels were being announced. The first smartphone with a 5-inch full HD screen was announced in November 2012.

The title texts explains another disagreement brought about from the different ways video can be filmed. Often referred to as the Soap Opera Effect, it is the feeling that a viewer gets when watching a film or video with a higher

frame rate such as a home films, older sitcoms, or (as the name suggests,) soap operas. The disparity comes from the fact that many small-time productions record with cameras running at 60 frames per second, while big-time productions either record directly on film or set their digital cameras to record at the same 24 frames per second as film. Visual problems such as blur, judder, and slow pans are mostly absent in high-frame rate productions, however, because of the lower budgets of small-time productions, high frame rates are thus associated with a feeling of lower quality. Major films such as *The Hobbit* and *Avatar 2* have attempted to break the norm by shooting with higher frame rates.

#733: Eagle

April 28, 2010



MY HOBBY: FOLLOWING FIELD BIOLOGISTS AROUND AND INTERPRETING EVERYTHING THEY SAY AS CODE PHRASES.

In the off-seasons, I hire an animal trainer to help confront secret agents with situations which they are unable to report by radio.

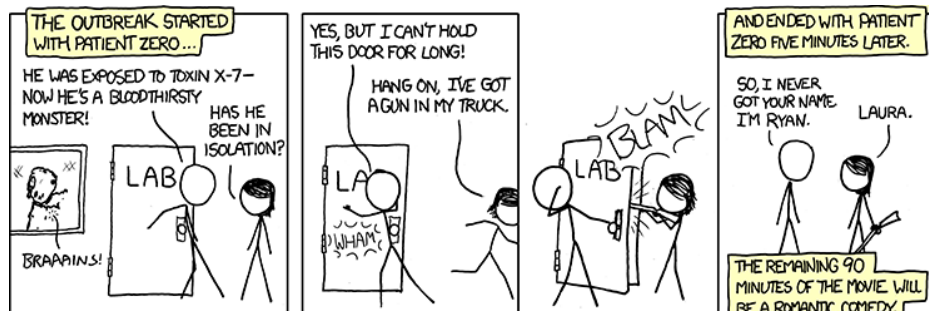
Explanation

This is another comic in the My Hobby series. This comic is making a play on the typical "secret agent" code phrases such as the one above or "The Eagle has landed." or "The cobra has struck." The word "eagle" is especially popular for code phrases, referring to craft containing a VIP. Randall says that his hobby is to follow field biologists around and interpreting everything they do as a code phrases. "The Eagle has landed" was also the first sentence Neil Armstrong sent back to earth on the first manned moon landing by Apollo 11 back in 1969. The *KHHHKHT* noises that the character is making are imitations of the static sounds made when using a walkie-talkie or other radio devices. On real radios, this happens only at the end of a transmission; the first use of the sound would be the end of Ponytail's legitimate transmission, while the second one is from the fake transmission.

The title text is saying that when the character in the comic is not following field biologists and pretending they're saying code phrases, he is doing the reverse to secret agents. By hiring an animal trainer he can give them a situation they are unable to report, such as seeing an actual eagle land in front of them.

#734: Outbreak

April 30, 2010



Let's get dinner after we promptly destroy all the X-7 we've manufactured.

Explanation

Patient Zero is the usual terminology for the first patient tested or infected with an outbreak-style infection, (in the comic's case, a zombie outbreak,) like in the movie *Outbreak*, which is not the main inspiration for this comic, except maybe the title.

This comic, however, serves to make fun of the stereotypical zombie movie in which an unlikely series of events, coupled with extreme oversight on part of the staff, leave an opening for an outbreak to begin. Often, the infected find themselves lacking any restraint or containment, and freely move about in search of humans to infect.

In the comic Ryan (drawn as Cueball) tells Laura (drawn as Megan) that the patient has been exposed to toxin X-7. The patient (a zombie version of a Cueball-like guy) can be seen through a window inside a laboratory, with Ryan trying to block the door. The patient has turned into a bloodthirsty monster that in true zombie-style calls out for brains, while walking with both arms stretched out and bits of him falling off, three typical cliches for zombie movies.

Laura then asks if the zombie has been kept in isolation, a standard medical procedure that prevents the patient from coming into contact with anyone or anything not specifically approved, and thus prevents the spread of the disease. Her question serves to point out the drastic

difference in real-life procedure and zombie movies.

When told that so far the zombie has been isolated her next action is to run to her car to obtain the weapon she has there to shoot the zombie, again showing contrast against the often irrational and illogical actions of medical staff in movies, whose behaviors usually lead to their deaths and to the spread of the disease, which causes the real outbreak. One person (or a few people) dying from a disease is not called an outbreak.

When Laura returns, she kills patient zero before he can spread the infection, and thus the outbreak ends in the third panel five minutes after it started in the first panel.

The comic ends with a little "mock the audience" joke as romantic comedies stereotypically have a very different audience from zombie horror movies.[citation needed] The two characters had never been introduced before, their names are first given in the last panel. Having such an intense and life-threatening experience often causes people to fall in love. But for a zombie/disaster movie this is supposed to happen just before the end titles, so you have all the fun first, and can go home on the happy ending. Since the "fun" part only lasted for five minutes the rest of the movie will now describe Ryan and Laura's romantic relationship after this comic.

As a result, the director(s) of this movie are deliberately showing the wrong kind of film to the audience attracted by the title or teaser. This would be disastrous for a movie in real life given that audiences do not take kindly

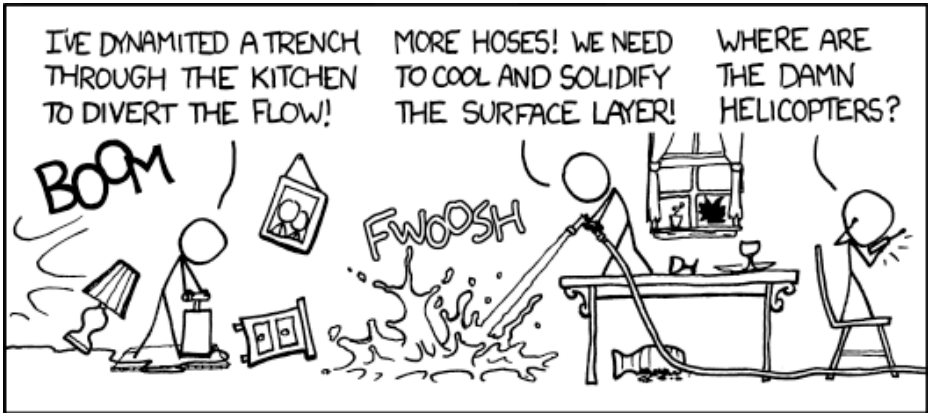
to such antics and are likely to pour hate about it online, dissuading others from going, and alienating both those audiences who enjoy romantic comedies and those who enjoy zombie films, leaving just a niche occupied by the people who enjoy both.

The title text is included as another example of the logical real-life actions versus the illogical movie ones, as any dangerous substance in a real lab would be disposed of, preventing further harm. In zombie movies, another major trope is the medical staff thinking that they are safe after they eliminate the first zombie, only to find the remaining chemicals have been used to make more. But before Ryan and Laura have had dinner, they promptly go back and destroy both the X-7 toxin and the last hope of the zombie fans seeing the movie of any further action...

Zombies are a recurring theme in xkcd. Though zombies are often depicted as being raised from the dead they are as mentioned often created (in films) through disease or toxins as is the case here. Apart from the three typical features of zombies mentioned, the zombie in this comic is also called zombie in the official transcript on xkcd.

#735: Floor

May 03, 2010



LIKE MANY KIDS, WE SOMETIMES PRETENDED THE FLOOR WAS LAVA. We once got grounded when we convinced the **FAA** to block flights through our county because of ash clouds.

Explanation

The floor is lava is a game many kids play where they pretend the floor is lava, meaning that they can't step on it or else they'll get 'burned'. In this comic, the three kids are taking this game too seriously (and in a nerdy way), causing great damage to the house with what appears to be a garden hose and some dynamite.

Stopping a lava flow by diverting it into an artificial trench or cooling the flow with (sea)water are both tactics that have been used in the past with varying success.

The title text refers to events like the 2010 eruptions at Eyjafjallajökull, the ash clouds of which caused the shutdown of most of Europe's IFR airspace. The first joke there is that grounding a child often means to consign them to their bedroom for a set period of hours (as a punishment), whereas grounding a plane means to disallow any use of that plane for an extended period of time. The most notable example of this is Concorde, which has been indefinitely grounded. The second joke is that causing panic and diverting a large number of flights would cause lots of financial damage, and would normally be subject to more punishment than simply giving the kids a time-out.

#736: Cemetery

May 05, 2010



FRANKLY, YOU DESERVE THIS.
YOU *KNEW* I WANTED A SANS-SERIF
FONT, AND YOU *IGNORED* ME.
|
SO REALLY, THIS IS *YOUR* FAULT.

I'VE DISCOVERED THE WORST PLACE
TO WANDER WHILE ARGUING ON A
HANDS-FREE HEADSET.

Three headstones down, I got a call from my mom and it went from bad to worse.

Explanation

Here, Cueball appears to be putting blame on someone who called him. This could be a result of...

In any case, the onlookers seem horrified at this sight. Cueball is using a Bluetooth headset that allows one to speak without actually holding the cell phone. The problem is that, since the headset is a small object attached to the user's ear while the phone is out of sight, someone using a Bluetooth headset may give the impression that he is talking to himself, or again, to a person who happens to be in front of him (even if the "unintended recipient" is dead). With Cueball standing in front of a grave and saying "This is your fault", to onlookers he looks like he's talking to the person buried there. This prompts the onlookers to assume either that the buried person died from some bizarre font-related accident, or, even more worryingly, that Cueball got so angry about the person using the wrong font that he murdered them over it, and is now insisting that they'd left him no choice — making Cueball appear as a petty, deranged monster.

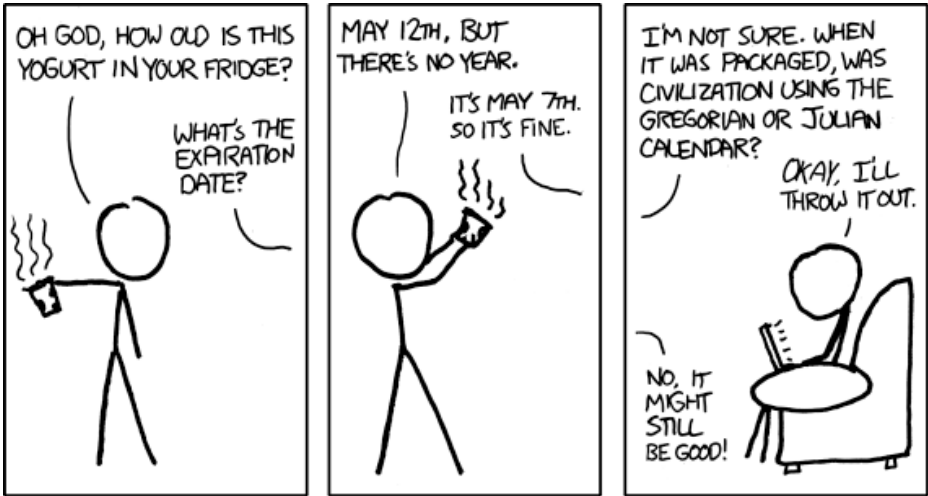
A sans-serif font is a font without serifs, small lines or strokes regularly attached to the end of a larger stroke in a letter or symbol. Common sans-serif fonts include Arial and Helvetica.

The title text suggests that Cueball is not on good terms with his mother, thus meriting a worse argument. The

problem is that Cueball was in front of a different tombstone, thus giving the impression that he had an even worse grudge against his seemingly deceased mother, said argument creating an even worse impression of Cueball.

#737: Yogurt

May 07, 2010



I am firmly of the opinion that if something doesn't have a year on it, every time the expiration date rolls around it is good again for the two weeks preceding that date.

Explanation

Most packaged food has an expiration date that indicates when the food will probably no longer be suitable for consumption. This could be due to any number of reasons; most products will rot or grow mold after their expiration date passes, but some processed foods will "dry out" or just generally become "unpleasant" long before they spoil. The expiration date is sometimes called a "best before" or "use by" date for this reason.

Some products don't list the year as part of the expiration date, on the assumption that by the time the year becomes an issue, the food will be spoiled. Cueball and his guest are encountering this issue; clearly, the yogurt has gone bad - it's raising "stink lines" and appears to have visible mold - but the expiration date only lists "May 12th" and it's currently May 7th, so Cueball reasons that it must still be good since the expiration date hasn't passed yet. Somehow, he fails to notice the terrible smell coming off of it.

The Gregorian calendar was initially adopted in the Catholic European countries in 1582 to correct the slow drift of the seasons relative to the calendar year that occurred under the Julian calendar. The Protestant and Orthodox countries were slower to adopt it. The British Empire, including the American colonies, adopted the Gregorian calendar in 1752. Cueball (in a seemingly sarcastic manner) wonders whether the expiration date might have been printed under the Julian Calendar, i.e.,

at least just under a century prior (some nations in Eastern Europe changed from the Julian Calendar to the Gregorian Calendar only around the time of the First World War).

The Gregorian calendar (our current calendar) is mostly the same as the Julian calendar with two major differences:

- The Julian calendar overestimated the length of a year by 10 minutes 48 seconds or about 1 day every 128 years. The Gregorian calendar has 97 leap days every 400 years instead of 100, which reduces the error to about 1 day in 3300 years.
- As each country adopted the Gregorian calendar, it was necessary to skip the appropriate number of days to realign the Vernal Equinox with March 21. When the British Empire adopted the Gregorian calendar in 1752, 11 days had to be skipped, so in the English-speaking countries, September 2, 1752, under the Julian calendar was immediately followed by September 14, 1752, under the Gregorian calendar; there was no September 3–13 in that year.

The last line spoken by Cueball may mean one of two things: either 1) he is continuing to be sarcastic toward his friend, or 2) he is genuinely considering that it may not have gone bad, despite all the clues saying otherwise.

The title text is Randall's own (absurd)[citation needed] view: for a short period preceding the expiration date of any food, no matter how many years have passed, it

suddenly becomes good to eat again. One might also wonder if the last two digits of the year were given in addition to just the day and month, and if Randall were given centuries to live, he might apply this principle centennially instead of annually.

#738: Incision

May 10, 2010



OCTOBER 8TH, 2004:

A CHILD SWALLOWS AN 'OPERATION' BUZZER, LEADING TO THE SINGLE MOST DIFFICULT SURGERY EVER PERFORMED.

At one point, by force of childhood habit, the doctor accidentally removed three or four organs.

Explanation

Operation is a board game wherein one attempts to remove all the organs of a patient, named Cavity Sam, with a pair of tweezers. A flat board has a cartoon image of a "patient", and dotted around various areas are holes inside of which contain plastic pieces representing the organs.

Additionally, each hole is lined with a metal connector, and the tweezers are made of metal, connecting via wire to the board. When the tweezers make contact with a metal connector, a buzzer sounds and a lamp on the patient's nose lights up to signal an error.

The game is notoriously difficult as the organs are quite small, and the buzzer is considered by players to be annoying, if not actually startling, particularly considering how much focus and steady hand is required to avoid the tweezers making contact with a metal connector.

In the comic, a child swallows a buzzer from such a board game, and the joke lies in the similarity between the game and actual surgery when the buzzer is brought into the mix. The title text brings this further by describing an incident where the doctor ended up removing several organs (the object of the game, but obviously not a good idea in real life).[citation needed] While playing the game, players take turns removing as many organs as possible before they slip and trigger the

buzzer; the title text jokes that the doctor fell back into this habit, and therefore removed several actual organs before coming to his senses.

The surgery would probably have been hard, as surgery requires concentration,[citation needed] with the game Operation being hard as well.

#739: Malamanteau

May 12, 2010



EVER NOTICE HOW WIKIPEDIA HAS A FEW WORDS IT REALLY LIKES?

The article has twenty-three citations, one of which is an obscure manuscript from the 1490's and the other twenty-two are arguments on LanguageLog.

Explanation

A malapropism is the use of an incorrect word in place of a word with a similar sound, resulting in a nonsensical utterance. An example of a malapropism is Yogi Berra's statement: "Texas has a lot of electrical votes," rather than "electoral votes". A portmanteau is a word made up of two or more combined words. For example, motel is a portmanteau, from the words motor and hotel. A neologism is simply a newly coined word that is not yet in common use. Here, Randall shows a hypothetical Wikipedia page of the word "malamanteau" which is both a portmanteau of "malapropism" and "portmanteau" and a neologism. The method used to create this new word is one of the very words used in the process. This is called a meta or "self-referential" joke.

By using many large obscure words in one sentence, Randall may also be picking on linguists, one of his favorite subjects, who are known for coining and using such words. "Malamanteau" was originally coined in 2007, when it was proposed by user ludwig_van on Metafilter as a term for language errors like "flustrated" (flustered & frustrated) and "misconscrewed" (misconstrued & screwed). The bottom line of the comic (Ever notice how Wikipedia has a few words it really likes?) is a reference to a large number of Wikipedia pages that start by labeling their subject matter as a malapropism, a portmanteau, or a neologism.

In response to this comic, editors at Wikipedia created a

malamanteau page. It was redirected to the xkcd page repeatedly back and forth and eventually fully protected. Malamanteau and the controversy at Wikipedia got coverage at The Economist and The Boston Globe. The comic is used to illustrate this section of the xkcd Wikipedia article. In order for this to be possible Randall had to change the license for this particular comic. This has been explained in a unique header text that is only displayed on the page for Malamanteau.

The title text refers to Wikipedia's requirements of citations for a page on there to exist. It also refers to the wide range of places citations can be obtained from, showing a direct opposition due to the use of very different citations (The Language Log arguments are modern and informal, whereas the obscure manuscript is formal and much older). The title text also refers to the fact that Language Log is frequently used for Wikipedia citations.

Language Log is a blog that posts content relating to language and linguistics, including things like malapropisms and portmanteaus. While an informal source, it has produced new linguistic terms before, such as eggcorn. Its comments sections frequently contain discussions and arguments about English, whose participants are probably the same people who write Wikipedia articles about linguistic phenomena like malamanteaus. In actual fact, Malamanteau did not appear on Language Log until after this strip. Malamanteau has since been referenced on the Language Log website, with a link to the comic in question.

Language Log has referenced xkcd many times before, reposting the comics and linking to the xkcd website.

The comic shows Wikipedia as it would have looked at the beginning of May 2010, using its then-current logo and the then-default “Monobook” skin. Incidentally, just a day after the comic’s publication, a new version of the Wikipedia logo was published, and the default skin was switched to the “Vector” skin. Both of these still define the look of Wikipedia as of 2021 (though Vector undergoes continuous updates). Interestingly, the “f” in Wikipedia’s tagline “Wikipedia, the free encyclopedia” (the one below the page title, though not the same phrase in the sidebar element) is lowercase. This differs from the other letters, which are written in xkcd’s standard all-caps font.

The title text jokingly refers to the “malamanteau” citations being Language Log references and a document from the 1490s, in reference to the fact that linguists, like those who post on Language Log, often use old documents as evidence, possibly to prove that construction is a longstanding feature of the language. The joke is that the only references to this word or concept are a 500-year-old document and linguists informally arguing about what it means. In reality, if these citations were the only evidence of the term’s use, then it would be unlikely to be a notable feature worthy of a Wikipedia article. Most articles that are only cited by a single website tend to get deleted unless the subject has achieved significant coverage in outside news media.

#740: 'The Tell-Tale Beat

May 14, 2010



You fancy me mad. Could a madman have outsmarted the greatest electronica/techno artists of our era? Next to fall will be Roderick Usher's house/trance band.

Explanation

Daft Punk was a French electronic music group. The beat used in electronic music can be vocalized or spelled as "unn-tss". "The Tell-Tale Heart" is a short story by Edgar Allan Poe, in which the narrator tries to appear sane while describing how he killed a man and hid his body in the floorboards. Eventually, he imagines he hears the dead man's heartbeat through the floorboards. "The Tell-Tale Heart" is referenced again in the later comic 2344: 26-Second Pulse.

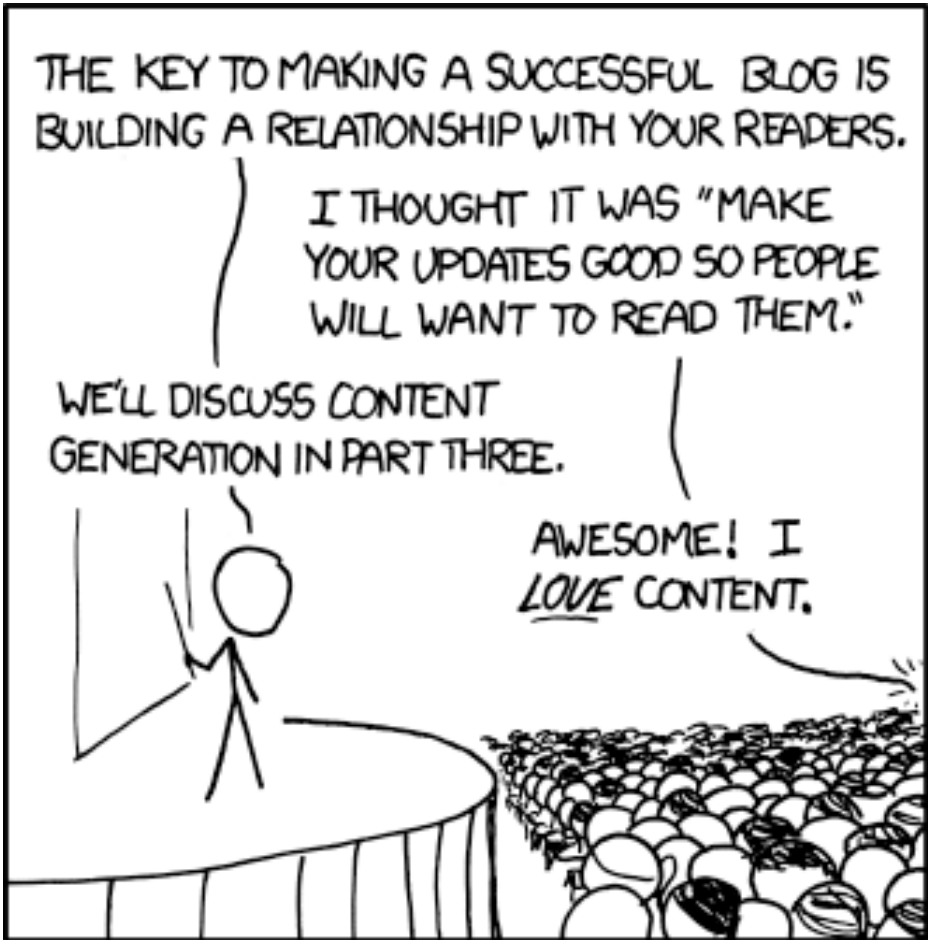
Cueball narrates that he killed Daft Punk and hid their bodies under the floorboards, as the narrator of 'The Tell-Tale Heart' did. (Having to outsmart a band named Daft Punk is quite ironic.) He says he has been haunted by the sound of the band's beats.

In the title text, the narrator continues trying to assert his sanity. The line, "You fancy me mad," comes directly from 'The Tell-Tale Heart'. He then insinuates that he will kill Roderick Usher's band; Roderick Usher was a character in 'Fall of the House of Usher', another story by Edgar Allan Poe, making puns on 'house' and 'trance', genres of electronic music (the character of Madeline Usher in the story suffers from catalepsy, frequently falling into trances). The title-text is also a pun on the musician Usher; although Usher does not have his own band, one of his best-selling albums was titled *Confessions*, appropriate to the themes of Poe.

The title text mentions techno music, which is the subject of 411: Techno and is also mentioned in 586: Mission to Culture.

#741: Blogging

May 17, 2010



I'm looking to virally monetize your eyeballs by selling them for transplants.

Explanation

This comic is a satire of the conflict between consumers who expect quality results and creators who just want to make easy money by pandering to their audience. Cueball says the key to making a successful blog is to build a relationship with your readers. While this may be a good way to ensure you are delivering content that is relevant to your audience, if a blogger keeps the audience's interests as the foremost priority, the blog may become focused on making their core audience happy rather than quality. When an audience member raises the concern that quality should be a paramount concern if you want to impress people, Cueball responds that content (the quality of the blog's content) will be addressed later in the speech. This quickly placates the audience member, illustrating how the audience (for example, readers) of a service can be easily satisfied by telling them what they want to hear. This validates Cueball's point that the audience does not want quality as much as they want to hear their own ideas repeated back to them.

Alternative explanation:

This comic is a shot at all the typical blogging and social media instruction that is given. Cueball indicates he believes great content is not the highest priority when writing a blog, relegating it to at least part three of the coverage. The person in the audience, who is representing the "normal people", shows that people

actually go to blogs for good content and couldn't care less about the other "strategies" the person on the stage is talking about. "Awesome! I love content," is probably highly sarcastic, implying that Cueball's talk is rather devoid of it. It could imply that the speaker thinks this talk is mostly marketing jargon that misses the fundamental aspects of writing skills (style, personality, good ideas, research, basics of style) and focusing instead on schemes to artificially gain popularity.

The title text takes a jab at blogs concerned with "viral content" and "monetization". That is, bloggers are only concerned about their audience because they might potentially give them money. Cueball drops some marketing jargon — "monetize the reader's eyeballs" — in order to disguise his true purpose: illegal organ harvesting. "Virally" in this context might indicate that the reader may become infected with a virus during organ extraction.

#742: Campfire

May 19, 2010



100 years later, this story remains terrifying--not because it's the local network block, but because the killer is still on IPv4.

Explanation

Cueball is telling a scary story to kids by the campfire about a killer. It seems as if the main character was able to trace the killer's computer to a local address (most likely one in her own house). 192.168/16 refers to the subnet the computer is on. The 192.168/16 subnet is reserved for private networks and traffic to or from addresses on that subnet and will not be routed by most internet-facing routers. Most home networks that are behind a router usually have addresses such as 192.168.0.xx or 192.168.1.xx and use NAT to present different addresses to the rest of the internet. Thus, the killer must have been extremely close, likely inside the house, using the victim's own computer network.

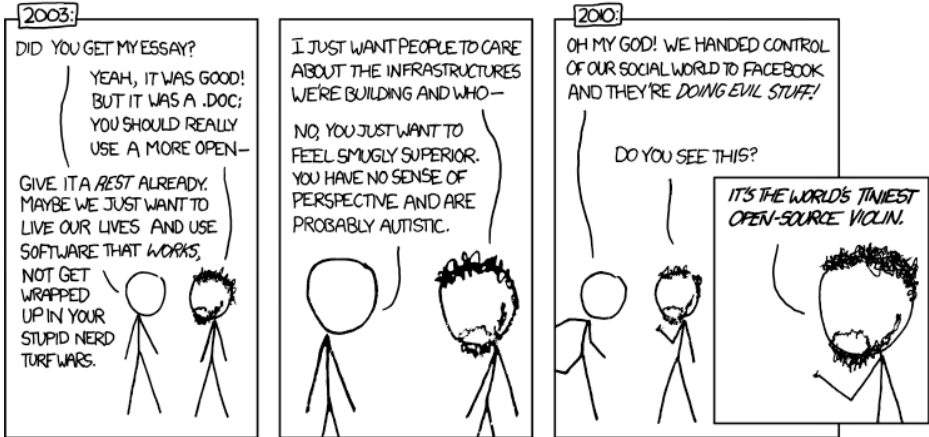
This is a modern update of a similar actual scary story, where the victim attempts to find the source of threatening phone calls only to find that they are coming from inside the house. Variations of this story made its way into several movies, including *When a Stranger Calls* (released in 1979, and re-made in 2006) or another version of the legend the movie was based on. All have a similar basic plot: the killer calls the victim at home; when traced, the call is coming from a phone inside the victim's home.

The title text claims that this story will still be scary in 100 years, as the killer is on IPv4. Currently the number of available IPv4 addresses are dwindling. There are plans to replace the addresses with IPv6, which will largely

increase the number of available addresses. In 100 years it would be very (technologically) scary for someone to still be using IPv4. This would be analogous to receiving a message by telegram today, rather than as an email or text.

#743: Infrastructures

May 21, 2010



The heartfelt tune it plays is CC licensed, and you can get it from my seed on JoinDiaspora.com whenever that project gets going.

Explanation

Cueball has sent an essay to his friend, likely Richard Stallman, an advocate of free and open-source software. While the essay itself was good, Stallman worries because the essay was in the .doc format, the proprietary format that old versions of Microsoft Word used. He advises Cueball to use a format based on an open standard, possibly ODF, ODT, ODS, ODP, or other types derived from something such as OpenOffice.org XML.

Cueball, who does not appreciate Stallman criticizing the file format over the actual contents of the file, accuses him of pedantically stirring up trouble instead of simply caring that the software works (which is what most regular users would be concerned about). Given that it can be a challenge to move from a familiar proprietary application to an open-source rival which may lack compatibility, features, support, and popularity, Cueball's stance is not entirely unjustified.

Stallman tries to explain that he is just concerned about the current proprietary software infrastructure that forces users to use software in a specific way, penalizing them for sharing the software or even preventing looking at the source code in order to learn what the program actually does or how it works. Cueball, however, isn't buying it, and accuses him of having an arrogance that crowds out his perspective, while also claiming that he is autistic, an ableist epithet often aimed, particularly by denizens of online forums and imageboards, at people

who have an intense fixation on seemingly trivial things.

Seven years later, Cueball runs to Stallman, having become alarmed at Facebook's immense control and dubious policies about the personal information it collects. Since this is exactly the kind of situation Stallman was warning against, he sarcastically retorts by producing "the world's tiniest open-source violin". This is a twist on "playing the world's smallest violin", a gesture used to convey sarcastic pity at someone else's misfortune. Interestingly, he does actually appear to possess the physical instrument itself, which is uncommon. This implies that he has been carrying around the violin for this eventuality (not unlike what Black Hat does in 757: Toot), or perhaps he uses this sarcastic expression often enough to warrant it. Since the violin is so tiny, it is rendered only by a few pixels forming a line bottomed with an ovoid shape resembling the vague shape of a violin. The problem with the lack of open source and Facebook is also the subject of 1390: Research Ethics.

The title text references the following pieces of infrastructure that are compatible with the "free software" ideology:

- Creative Commons licenses (CC licensed) use existing copyright law to permit someone to share a creative work anywhere so long as the sharer attributes credit to the creator of the work. The particular CC license chosen may also allow for modification, derivative works, and/or commercial usage. The fellow's phrase

"you can get it" in the title text is ambiguous: is he offering to share the code for the violin, or the tune that the violin plays? But since CC licenses are not used for software, we can assume "it" refers to the tune: either an audio recording of it, or perhaps source material from which to make modified versions.

- diasporafoundation.org (formerly joindiaspora.net, and then joindiaspora.com) is the central host of Diaspora*, an open-source alternative to Facebook which puts the user in control of how their information is used. Of course, this sort of use of Diaspora would eliminate Cueball's concern over how Facebook handled his information. A few months after this comic released, a consumer alpha version of Diaspora* was released, and, after more than a decade, an official version would be released.
- a Diaspora "seed" is a personal web server that interacts in a Diaspora "pod" of servers. It stores all of your information (such as the tune in this case) and shares it with your friends, in a way that respects your preferences around privacy, etc.

#744: Walkthrough

May 24, 2010



There's nothing hotter than porn dubbed over with a poorly-mic'd teenager's voice explaining each step in a droning monotone. 'okay, we're almost at the spawn point ... separate the labia, but watch out, there are more inside them ..."

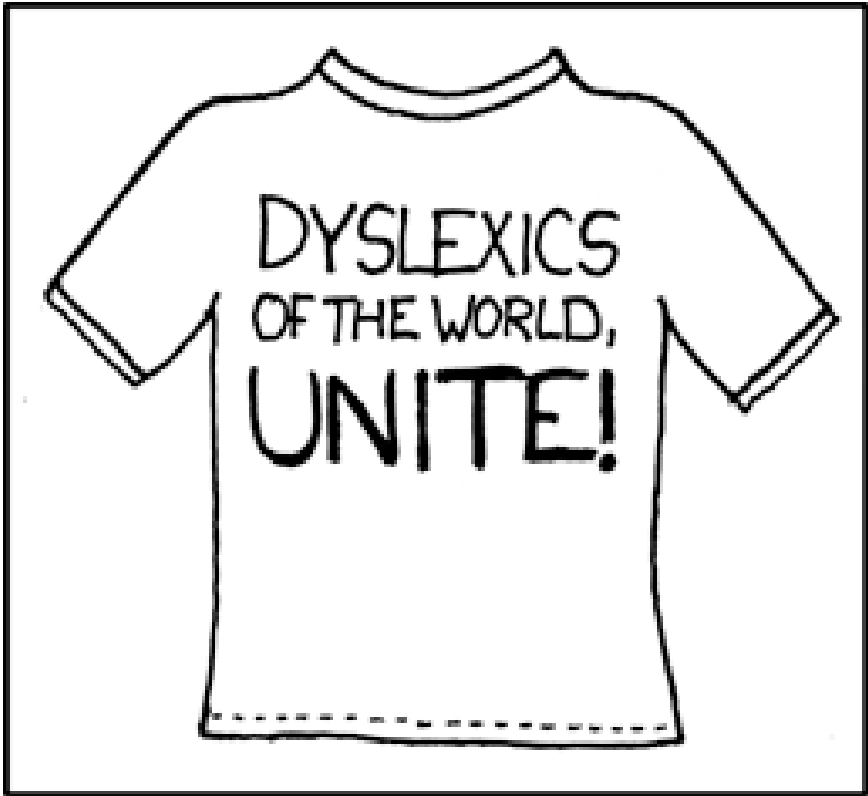
Explanation

A walkthrough video is a recorded explanation of how to accomplish a certain task, usually beating a video game (or a particular level of one). A speedrun is an attempt to complete a level or game as fast as possible. The man is implying that because he followed the speedrun video, intercourse didn't last long enough to satisfy his partner — who now probably doesn't want to date him again as a result.

The title text (humorously) shows what the narration on such a video might be like, based on typical video game walkthroughs. In a video game, a spawn point is a place where enemies, items, or players will appear; here, spawn is also being used in the biological sense of mating and reproduction. The "separate... more inside" part is similar to typical instructions about how to get past certain enemies or traps, while it could also refer to the labia majora and minora. Separating the labia majora would reveal the labia minora.

#745: Dyslexics

May 26, 2010



THE DYSLEXIC SUPPORT GROUP RAN INTO DIFFICULTIES WHEN THEY TRIED TO MAKE A JOKE FUNDRAISER T-SHIRT.

And of course I had to redo this like three times because I kept writing 'UNTIE'; I kept doing 'doing 'doing it wrong' wrong' wrong.

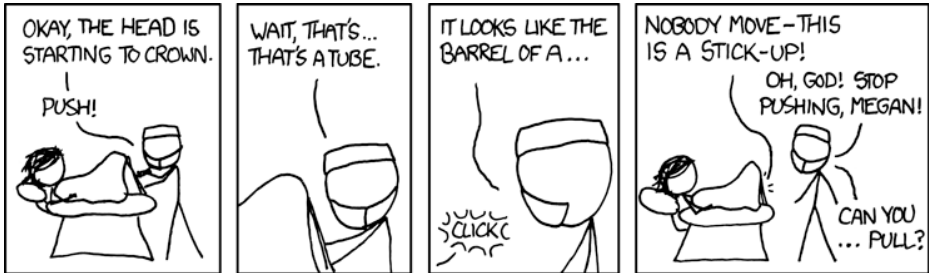
Explanation

The joke shirt is supposed to be "Dyslexics of the world, Untie!", a nod to the The Far Side comic touching on the same topic (Dyslexics marching in parade, carrying a sign (inadvertently) reading "Dyslexics of the world UNTIE" because dyslexics mixed up the T and the I). In this case, the dyslexics were trying to make a parody of their propensity to transpose letters. The double transposition cancelled out, resulting in the original (but unintended) untransposed message.

The title text is an inversion of the inversion of the joke in the comic, in which Randall accidentally wrote the "incorrect" version of the shirt while trying to draw the comic. The last sentence ("I kept doing 'doing 'doing it wrong' wrong' wrong") means that, unwittingly, Randall kept failing at failing at failing.

#746: Birth

May 28, 2010



All those **GTA** marathons during the pregnancy were a bad idea.

Explanation

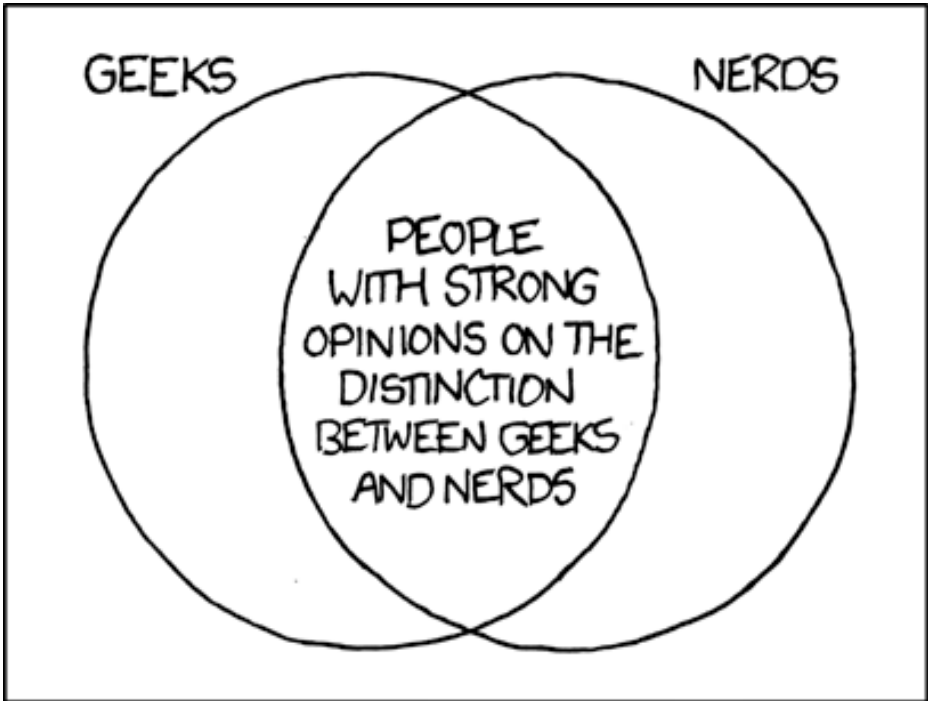
Megan is in the process of giving birth. Instead of the normal birth we would expect, a baby's head and a gun emerge. The baby, who can already talk, attempts to rob the doctor saying, "Nobody move-this is a stick-up!" as is typical in movie robberies. It is not explained how the gun ended up in Megan's womb.

The title text explains the comic by explaining that the baby learned this bad behavior because the mother played the video game Grand Theft Auto (GTA) too frequently, as some people believe that if children play too many violent video games they act like the video games in real life. Grand Theft Auto has been criticized and publicly blamed for its potential to encouraging violent behavior in children. Thus, this comic is a parody of the studies and news stories about the effects of video games, especially Grand Theft Auto, on children; it hyperbolizes them by imagining what effects video games would have on an unborn baby.

This is one of the few comics that features Megan's name in the text.

#747: Geeks and Nerds

May 31, 2010



The definitions I grew up with were that a geek is someone unusually into something (so you could have computer geeks, baseball geeks, theater geeks, etc) and nerds are (often awkward) science, math, or computer geeks. But definitions vary.

Explanation

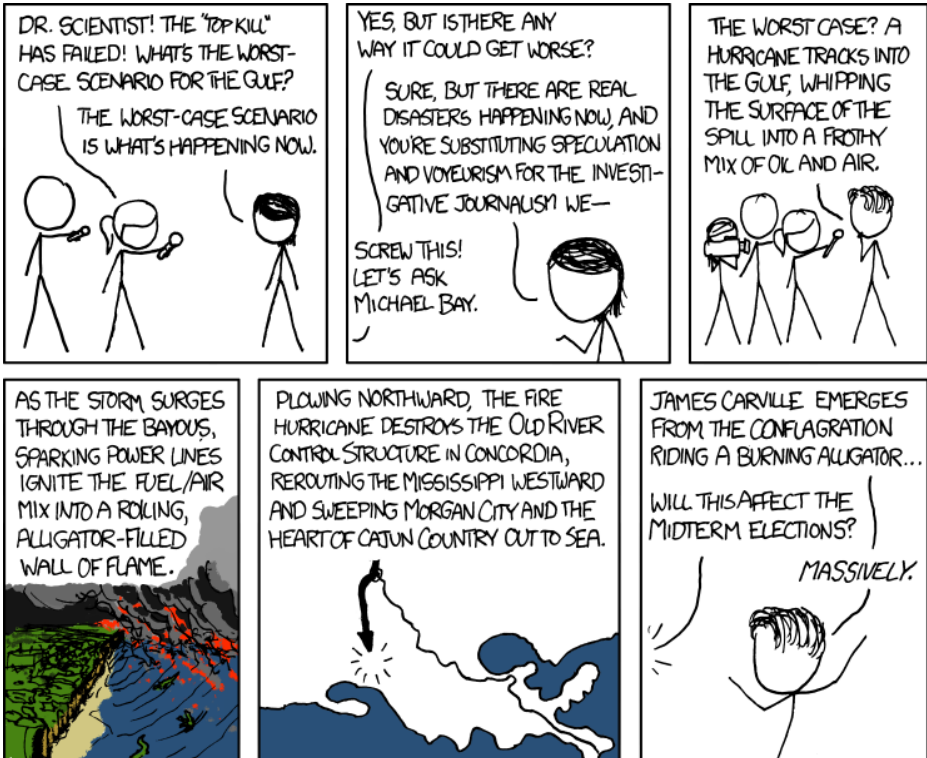
The words "geek" and "nerd" are both commonly used to describe people who are looked down upon due to being too intelligent and not socially conventional enough. Distinction between the two varies, but it commonly involves differences in range of interests, depth of interests, choice of hobbies, social capability, if you play sports, and so on.

The title text gives Randall's personal definitions: geeks are people passionately into something to a greater extent than casual hobbyists, while nerds are analytical logic-oriented people, often with underdeveloped social skills.

The comic makes the argument that if you care a lot about the distinction between a geek or a nerd, then you are most likely too invested in the result to not be either a nerd or a geek. But although one who maintains this distinction strongly could be a linguistics geek merely expressing their general interest in words/expressions, given the more pressing controversies linguistic geeks have to deal with, the strong interest one might have in the words "geek" and "nerd" is probably due to simply being a nerd geek nerd geek nerd.

#748: Worst-Case Scenario

June 02, 2010



To get serious analyses of hurricanes and oil slicks, see [Jeff Masters' blog](#). To get serious discussions of worst-case scenario thinking, see [Bruce Schneier's blog](#). To get enough Vitamin D, don't read any blogs and go outside instead.

Explanation

This comic is a reference to the Deepwater Horizon oil spill that happened in the Gulf of Mexico. Top kill is a reference to a procedure used as a means of regaining control over an oil well that is experiencing an uncontrolled eruption of crude oil. Michael Bay is an American film director known for his over the top special effects and plots, one example being the Transformers movie franchise.

Should the proposed firestorm actually happen, residential areas and hundreds of square miles of sensitive vegetation would be fouled by the mix of oil and sea water. A firestorm would certainly make the bad situation worse, and would certainly make a great scene in a typical Hollywood disaster movie. Lightning could set an oil slick on fire, in regions where the oil is most dense and very fresh. About 50-70% of the evaporation of oil's most flammable volatile compounds occurs in the first 12 hours after release, so fresh oil is the most likely to ignite. However, the winds of a hurricane are so fierce that any surface oil slick of flaming oil would quickly be disrupted and doused by wave action and sea spray. Heavy rain would further dampen any lightning-caused oil slick fires. So Michael Bay's firestorm would not actually happen in real life. However, if he decides to direct a new movie...

This comic is a commentary on the state of broadcast journalism and how they are always looking for

speculation and voyeurism rather than facts. That they ask if Mr. Bay's proposed firestorm will have any effect on the then-upcoming congressional elections just serves to underline how little the journalists actually care about the damage that has actually been caused.

James Carville is a political commentator who was born and lives in Louisiana, and thus relates to media, politics, and Louisiana at once.

The title text has a reference to Jeff Masters, who was director of meteorology at Weather Underground and runs a blog (archived), and Bruce Schneier, who is a world-renowned security expert and also has a blog and several books. Vitamin D is a vitamin that the human body can synthesize with the aid of direct sunlight; the joke, "go outside", is Randall accusing us of all being shut-ins.

#749: Study

June 04, 2010



Volunteers needed for a study on transmission of urushiol from digital contact with thin strips of fibrous cellulose pulp.

Explanation

This comic is about the ubiquitous study fliers that are placed around cities and especially college campuses.

This one obviously takes it to the absurd because it is a thinly-veiled attempt to get volunteers so that their kidneys can be "harvested" or stolen. Type O is a blood type that omits both A and B antigens so it won't cause reaction in blood types having anti-A or anti-B antibodies and thus people having this blood type are the most valuable for transplants (there are still other antigens that can cause reactions but these two are the most important).

Urushiol is an oily toxic irritant present in poison ivy and some related plants, digital contact means touching something with fingers and fibrous cellulose pulp is a scientific description of paper. This together suggests that the person who put up the flier soaked the strips with urushiol and is trying to see if it will cause irritation in anyone who will touch the strips with their fingers (and it will within ten minutes)[citation needed].

#750: Book Burning

June 07, 2010



Of course, since their cautionary tale was reported in a print newspaper, no one read it.

Explanation

A group of people wanting to hold a book burning find themselves in a conundrum when they only have one book. Going to an online retailer reveals that the Kindle edition of the book is considerably less expensive than the hardcover edition. Unfortunately for the book-burners, the burning of a Kindle proves fatal because of the toxic fumes from the burning of its plastic shell, internal electronics, and/or the lithium polymer battery that powers it.

One purpose of book burning is to destroy heretical material and thus prevent the spread of those ideas. In this case, where a Kindle version downloaded and the device is burned, no heretical material is destroyed as the electronic version is still available for distribution. Those who survived the incident will then find that their actions did not prevent the spread of the heretical ideas, they have lost dear friends,[citation needed] and have to purchase new electronic devices.

Another purpose for a book burning is to have a public demonstration in protest of the ideas presented in the book. This may have been the purpose of the book burning mentioned in the comic, but this plan failed, as indicated by the title text, because it was reported in the newspaper, which no one reads.

In the past there were many book-burning incidents.

There is also a subtle pun in that "kindle" means "to start a fire".

The title text further drives home the point that electronic media is becoming the norm, while print is being supplanted by inventions like the Kindle.

#751: Swimsuit Issue

June 09, 2010



Parents: talk to your kids about popup blockers. Also, at some point, sex. But crucial fundamentals first!

Explanation

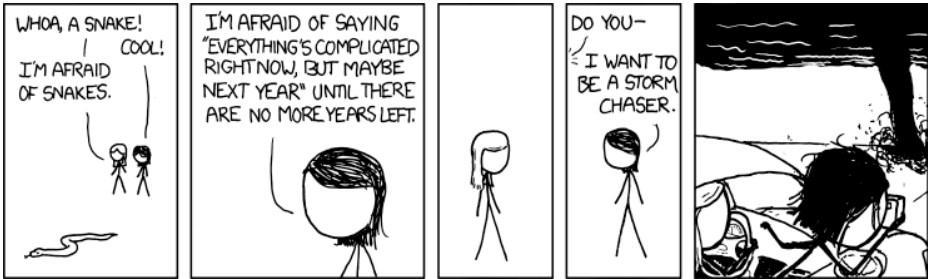
Sports Illustrated, while a sports magazine (from what the title implies), is infamous for its Swimsuit Issue, a yearly issue that heavily features women wearing revealing swimsuits (again, from what the title implies), something generally agreed upon as inappropriate for children.[citation needed]

However, the joke is on the father. Before he could stop the child from reading, the child had already made it clear that he had seen hard-core pornography in the pop-up ads he had encountered. He is familiar with the sight of women being "double penetrated" (i.e. engaged in simultaneous vaginal and anal sex) and that said women are completely naked (implied by his surprise to see similar-looking women wearing swimsuits in the magazine). Thus, the swimsuit issue, in which the women are wearing some clothing and are not engaged in sexual activity, is relatively tame.

The title text has Randall suggest that pop-up blockers are far more important than The birds and the bees, a stance that most people do not agree with.[citation needed] There is some sense towards this approach, however. While "the birds and the bees" conversation would have to wait until the child has matured enough to understand, the removal of explicit pop-ups (and other advertisements) is arguably more urgent. Pop-up blockers alone would not prevent everything, but are a valuable asset nonetheless.

#752: Phobia

June 11, 2010



Oh God, the tornado picked up snakes!

Explanation

This comic seems to be about phobias, i.e. being afraid of specific and non-specific things like Blondie's fear of snakes.

Prompted by Blondie's admission, Megan becomes philosophical (as she often does) and reveals an unusual phobia of her own: outrightly rejecting something until next year by making the excuse that everything is complicated right now up to the point where there is no next year left anymore because the opportunity has passed or she died. This may be applied to a romantic relationship (possibly with Blondie) but is equally applicable to any (big) decision, like migrating to another country, changing the job or, as in this case, fulfilling one's dreams.

After Megan has said this, Blondie thinks for some time (in the beat panel). When she finally decides to ask Megan something (perhaps to go out on a date), Megan cuts her off to say that she wants to be a storm chaser.

In the last panel we see that both, Megan and Blondie, have become storm chasers — individuals who pursue severe weather conditions, for either scientific investigation or providing media coverage, or simply for adventure. Ironically, chasing adverse weather, especially tornadoes, is more dangerous than the source of either character's original phobia. Indeed, one's ability to control the risk while being near a tornado is far less than

one's ability to control the risk of being bitten by a snake; the tornado is violent and unpredictable, while snakes only attack humans when they feel threatened. Additionally, one needs to deliberately expose oneself to the snake in order to have any risk of being attacked.

This comic may be related to the movies *Snakes on a Plane* (if not the similar fears of *Indiana Jones*, instead), *Twister* and *Thelma & Louise*. The first two cover the issues of snakes and tornados. The last of these movies has two women friends on a road trip, and in the end they kiss, and there have been several discussions on whether one or both of them are lesbian or not. *Snakes on a plane* was previously mentioned in 107: *Snakes on a Plane! 2*, with tornados and weather chasing in 640: *Tornado Hunter*.

In the title text, Megan and Blondie notice that the snakes have been picked up by the tornado they are chasing; so now, in addition to the violent weather, they are also exposed to the danger of snakes falling from the sky. (This is similar to the plot of *Sharknado*, although that movie was released several years after this comic.)

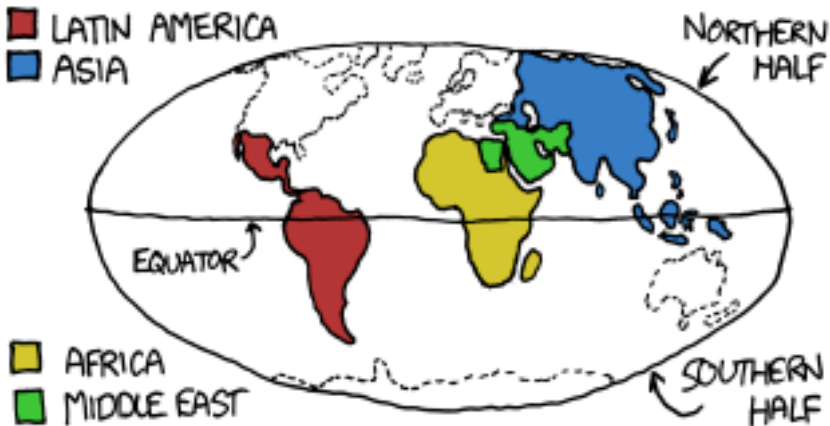
This is the third comic about tornadoes and storm chasers, a recurring subject on xkcd. These were first mentioned in 402: *1,000 Miles North*, and first shown in 640: *Tornado Hunter*.

#753: Southern Half

June 14, 2010

THE GREAT BATTLEFIELD FOR THE DEFENSE
AND EXPANSION OF FREEDOM TODAY IS THE
WHOLE SOUTHERN HALF OF THE GLOBE—ASIA,
LATIN AMERICA, AFRICA, AND THE MIDDLE EAST.

—JOHN F. KENNEDY, 1961 SPEECH TO CONGRESS



OKAY, SO I'M HALF A CENTURY LATE
ON THIS, BUT IT'S BEEN BUGGING ME:
DID JFK OWN A GLOBE?

Also, if you read his speech at Rice, all his arguments for going to the moon work equally well as arguments for blowing up the moon, sending cloned dinosaurs into space, or constructing a towering penis-shaped obelisk on Mars.

Explanation

On May 25, 1961, U.S. President John F. Kennedy gave a speech before a joint session of Congress, in which he set as a goal for the American people the task of landing a man on the moon and returning him successfully to earth. Though Kennedy didn't live to see that goal become a reality - he was assassinated in 1963 - the Apollo 11 lunar module landed Neil Armstrong and Buzz Aldrin on the moon in July, 1969. During that speech, Kennedy said the sentence that the comic is referring to, and the map provided shows that the vast majority of the regions he mentioned are actually in the Northern Hemisphere, despite Kennedy calling them "the whole southern half of the globe", not to mention the Southern Hemisphere has regions which are not included (like Australia).

The actual meaning behind Kennedy's statement is likely a reference to the common lingo used describing the 'third world' as the 'Global South', which is a metaphorical rather than geographical description which includes all of the regions mentioned (though leaving out the USSR from Asia, as Soviet satellite states are commonly referred to as "second-world" to the West's "first world" and un- or underdeveloped nations' "third world"). At the time, a number of proxy wars between the U.S. and the USSR had broken out and were in progress in many third world countries across the entirety of the regions mentioned. Thus, Kennedy was describing the Cold War and his expectation that it

would continue, and that the 'Global South' would be the actual battlefield. Out-of-context, and insisting on a literal geographic interpretation for the words, this part of the speech sounds particularly funny.

Another way to understand Kennedy's phrasing is a reference to the "southern half" of the land on earth. Because the area south of the equator is mostly water, the geographical centre of Earth (geometric centre of all land surfaces) is in Turkey, meaning that (with the exception of the Russian part of Asia) almost the entirety of the regions Kennedy listed are in the southern half of Earth's land surfaces.

A third way is to interperate what the comic interperates as a dash as a comma making the sentence a list only, instead of a list and saying what the list is of.

The title text refers to a September 1962 speech Kennedy gave at Rice University. One of the most famous quotes from that speech is, "We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard." Randall suggests that all of the arguments Kennedy made for going to the moon could also serve the cause of many different "innovations", such as blowing up the moon, sending cloned dinosaurs into space, or, ridiculously, constructing a towering penis-shaped obelisk on Mars. Or, as seen here, eating a bag of pinecones.

#754: Dependencies

June 16, 2010

PAGE 3			
DEPARTMENT	COURSE	DESCRIPTION	PREREQS
COMPUTER SCIENCE	CPSC 432	INTERMEDIATE COMPILER DESIGN, WITH A FOCUS ON DEPENDENCY RESOLUTION.	CPSC 432

The prereqs for CPSC 357, the class on package management, are CPSC 432, CPSC 357, and glibc2.5 or later.

Explanation

A compiler is a program that converts code written in a high-level programming language into an executable program. A section of code is said to be dependent on a second segment of code if the second segment is required for the first segment to work. Dependency resolution is part of compiler design, and is the study of determining and correcting dependencies which result in an unwanted, ambiguous, or impossible definition of the dependent section. Requiring that an action occurs if and only if the action has already occurred, like the prerequisite in this comic, is one type of potentially unwanted dependency.

The comic envisions a college computer science course (CPSC432) focusing on "compiler design with dependency resolution" which has itself as a prerequisite. The joke is that the prerequisite is an unresolved dependency, as you must complete this course before you can enroll in it, a phenomenon called Catch-22.

This dependency would send a poorly designed compiler into an infinite loop. In real life, the problem is solved by allowing an object to satisfy itself as a prerequisite. This stops the compiler's infinite loop, but may not produce the desired functionality in the program. Another layer of the joke may be that any student who successfully enrolls in the class already knows this solution because they must have employed it in order to get past the apparent infinite recursion in the class prerequisites.

Managing dependencies is useful in other areas of computer science, e.g. package management. Collections of files are known as "packages". A software package might require that a particular operating system patch (a type of package) be installed first. That package might in turn require other packages be installed, and so on. Therefore, a package installer must know the dependencies of a package, and be able to figure out whether any required packages are missing before continuing with the installation.

The title text envisions a course on package management which has itself as a prerequisite, as well as the compiler design course with the impossible prerequisite presented in the main comic (CPSC 432), and glibc2.5 or greater. By looking at the course number it can be observed that CPSC 432 is a fourth year course, and this package management course (CPSC 357) is a third year course. Glibc is a commonly used package on Unix systems, and therefore should be taught in the course. This continues the joke since this course has the following unresolved dependencies:

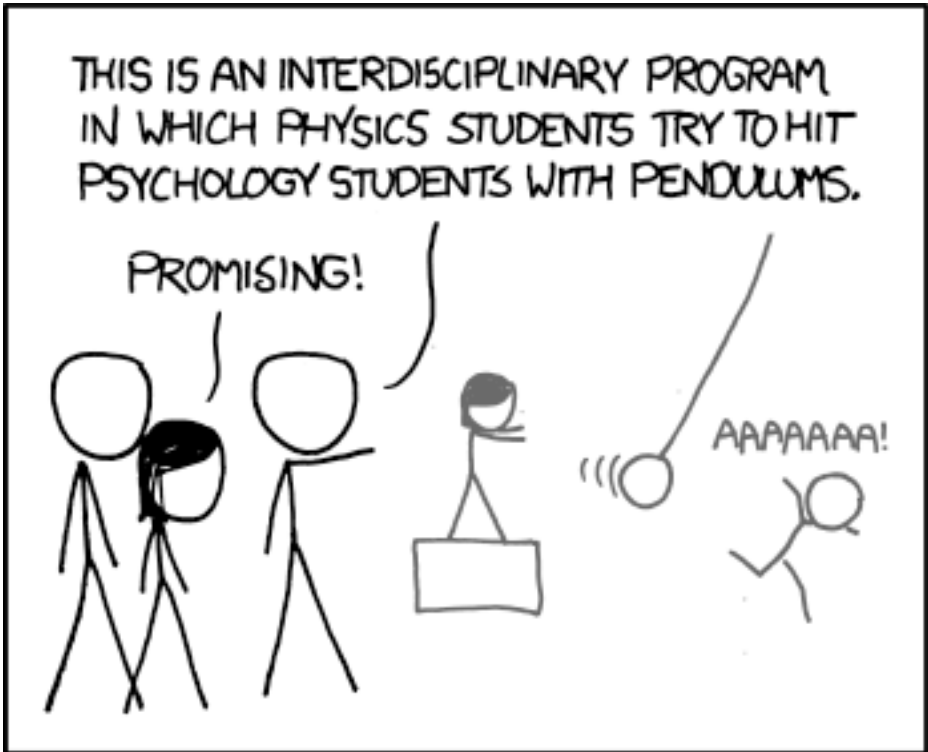
- Requiring that the course be a prerequisite to itself (CPSC 357).
- Requiring that a course with an unresolved dependency (CPSC 432) be a prerequisite, as CPSC 432 can not be taken.
- Requiring that a fourth year course (CPSC 432) be a prerequisite to a third year course (CPSC 357), as the student should be in their fourth year while taking

CPSC 432, and should be in their third year while taking CPSC 357. This is analogous to a lower-numbered package requiring a higher-numbered package.

- Requiring that the student knows part or all of the course material (glibc2.5 or greater) before taking the course, as the student is supposed to learn this information from the course.

#755: Interdisciplinary

June 18, 2010



MY PROFESSORS HAD AN ONGOING COMPETITION
TO GET THE WEIRDEST THING TAKEN SERIOUSLY
UNDER THE LABEL "INTERDISCIPLINARY PROGRAM."

Replace the pendulums with history students and you'll
qualify for a grant!

Explanation

An "interdisciplinary program" is a program at a school or university that involves students from multiple disciplines, or fields of study. Here, this comics lampoons the concept by envisioning an oddball exercise involving physics students and psychology students. Strictly speaking, this could be categorized as an interdisciplinary program. Further, the study of pendulums is common in physics courses, and the concept of fear arises in psychology, thus the joint effort can be supposedly said to unify both subjects.

The intersection of physics and psychology suggests the classic demonstration in which someone holds a heavy pendulum up against their face and releases it. Basic physics shows that the pendulum will, at most, harmlessly touch the person's face on the backswing (provided that they released it with no initial push and they do not lean forward); however, it may take some force of will to refrain from flinching as the pendulum approaches. This experiment (with Black Hat's twisted take) is referenced in 1670: Laws of Physics and 2539: Flinch.

In another example where the two concepts meet, the pendulum-like motion of objects (such as a gold pocketwatch on a chain) is stereotypically used in portrayals of psychology as a device for hypnotism.

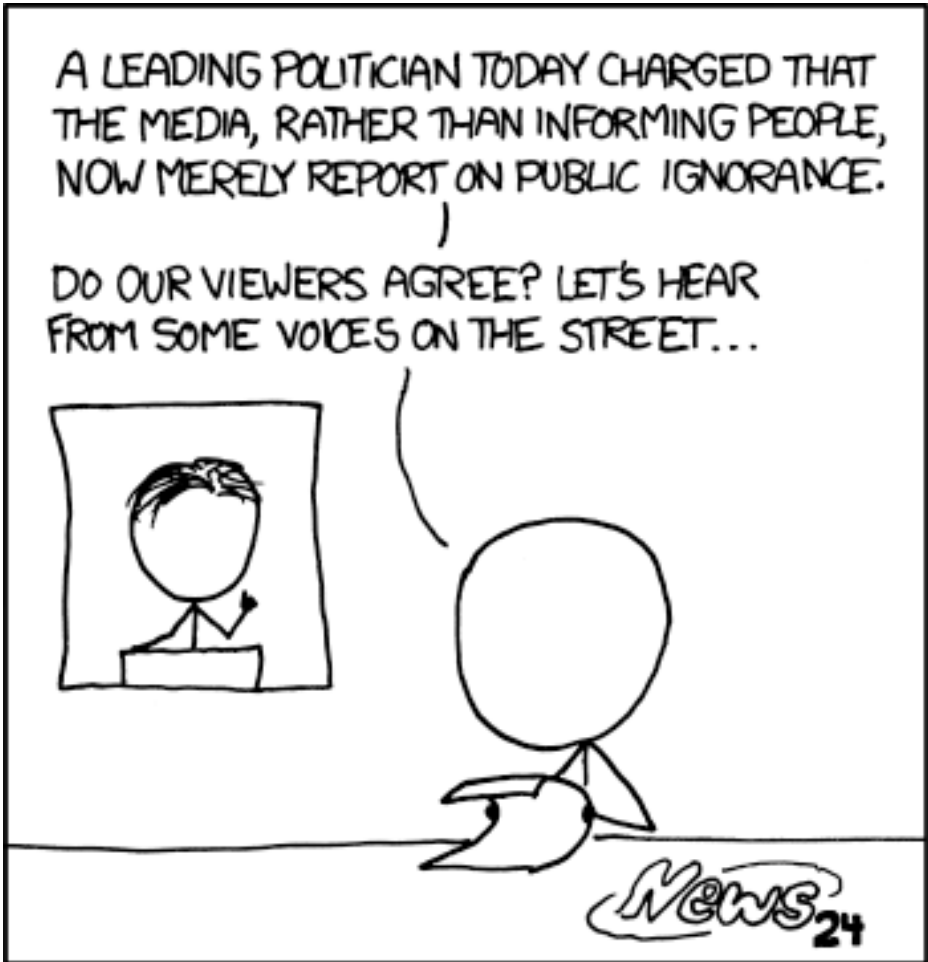
Making fun of Psychology, History, and English majors

is a common theme in various xkcd comics, such as 451: Impostor.

The title text suggests that replacing the pendulums with history students would guarantee funding of a grant, perhaps because of the increased number of disciplines involved. In reality it of course serves to increase injuries among students in majors that the physics students might view as enemies. Interestingly, this is apparently being said by the grant funders rather than the professor.

#756: Public Opinion

June 21, 2010



News networks giving a greater voice to viewers because the social web is so popular are like a chef on the Titanic who, seeing the looming iceberg and fleeing customers, figures ice is the future and starts making snow cones.

Explanation

Cueball as a news anchor is reporting a message from a politician, shown behind him.

The comic is mocking the "old media" (television, radio, newspapers) for their move to opinions as an information source. Such change came with development of the internet and "new media" as source of information (websites, blogs, social networks), which pushed "old media" back and diminished their significance. In their attempt to return to relevance, "old media" tried to copy the opinion part of the news, taking what could be considered a bad thing from them. The humor of the comic comes from news anchor cutting to an opinion piece from people on the street, thus proving the politician's point.

The title text illustrates what Randall sees as the problem with this approach. The new media, for the large part, consists of uninformed opinions from people of average intelligence and abilities. However, the sheer volume and immediacy of information is threatening to destroy old media, much as the iceberg destroyed the Titanic. You don't join with the iceberg or try to emulate its methods; the iceberg does not care, it's too big and will destroy you anyway. If possible, then the best way to survive is to steer far away to avoid it and find your own path. (Ironically, the Titanic sank because it steered away just enough for the iceberg to scrape its side, tearing into multiple compartments. If it had steered straight into

the iceberg, although the bow would have been severely damaged, the ship might have stayed afloat.) Old media must present us with something better than new media (for example: informed, analytical, intelligent), otherwise we have no need of them.

#757: Toot

June 23, 2010



This is also one of only five identified situations in which a vuvuzela is actually appropriate.

Explanation

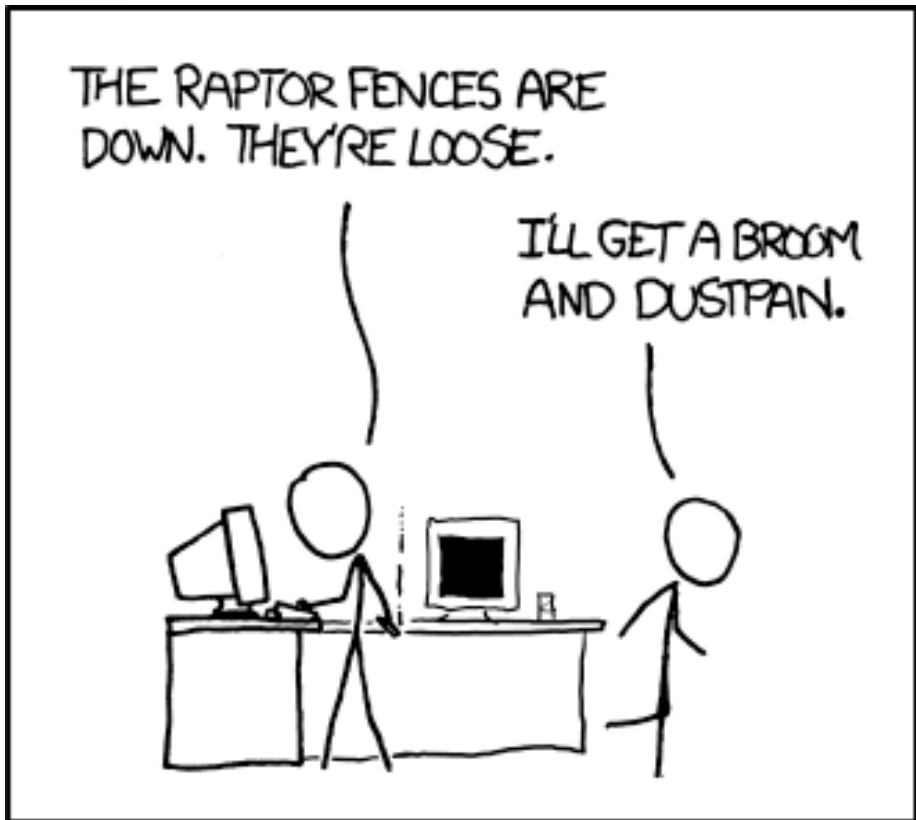
"Toot my own horn" is an idiom meaning to brag. Cueball here is using this idiom to mean that he is not bragging, although he obviously is. However, Black Hat, being the classhole he is, takes this idiom literally and toots (blows) an air horn. An air horn is a horn attached to a can of compressed air, and at close range is extremely loud. Cueball is obviously surprised, as he was expecting Black Hat to start bragging instead of making an extremely loud sound with an air horn.

Black Hat's actions could also be interpreted as punishment of Cueball, who began by claiming that he didn't want to boast about his accomplishments, but then did so anyway. Or he could just be proving that he is a classhole by 1-upping Cueball.

The title text refers to the vuvuzela, which is a noise-generating instrument,[not that notable] [all instruments make noise] mainly used for making noise at soccer matches in South Africa. This comic was published during the 2010 FIFA World Cup in South Africa, and the constant buzzing from vuvuzelas throughout the matches attracted attention and controversy.

#758: Raptor Fences

June 25, 2010



JURASSIC PARK GOT A LOT LESS SCARY WHEN THE RESEARCHERS DISCOVERED THEY COULD ACTIVATE THE GENE FOR EXTREME DWARFISM.

If at least one person has a nightmare about being swarmed by hundreds of mouse-sized dromaeosaurids, my work will have been done.

Explanation

In the film Jurassic Park, the protagonists are menaced (some fatally) by carnivorous dinosaurs, including very large velociraptors, which are a genus of dromaeosaurid. In this film, the dinosaurs had been recreated via the sampling of ancient DNA recovered, primarily, from the stomachs of mosquitoes trapped in amber (fossilized tree sap).

Cueball is holding a lit cigarette, recalling the role of chain-smoking John "Ray" Arnold, the Chief Engineer of Jurassic Park, played by Samuel L. Jackson. He is reporting that the (veloci)raptors have escaped from their enclosure, but nobody seems overly concerned by this; they do not represent a danger. Apparently, the fear of being hunted by dinosaurs is greatly reduced if they have been genetically engineered to be small enough to gather up with a broom and dustpan.

The "gene for extreme dwarfism" may also be a reference to the "Ender's Game" series, which has previously been referenced in 635: Locke and Demosthenes, 304: Nighttime Stories, and 241: Battle Room. In the parallel book to "Ender's Game", "Ender's shadow", the main character has had the gene for extreme dwarfism activated on himself as an infant.

Note that while growth is dependent on genes, it is extremely unlikely that any kind of genetic manipulation could reduce an animal in size by the factor of

approximately 10,000 that is implied here. However, it is perhaps no less unlikely than being able to recreate the dinosaurs at all in the first place. People seem ready to ascribe almost limitless powers to DNA and genetic engineering, but there are many practical constraints.

In reality, velociraptors were only about 50 centimeters in height. It is also believed that they were covered in feathers. Together, these factors paint a very different picture of velociraptors. The velociraptors from Jurassic Park more closely resemble *Deinonychus*, a relative of the velociraptor, in fact the *Deinonychus* was used as the model for the Jurassic Park raptors. Still the name "velociraptor" has been consistently, and incorrectly, associated with their portrayal.

The title text suggests that even very small dinosaurs could be terrifying to some, if they imagined a huge number of them. Randall would be pleased if this were the case.

#759: 3×9

June 28, 2010

$$4) \quad 3 \times 9 = ?$$

$$= 3 \times \sqrt{81} = 3\sqrt{81} = 3\sqrt{\overset{27}{81}} = 27$$
$$\begin{array}{r} 6 \\ 21 \\ \hline 21 \\ \hline 0 \end{array}$$

Handy exam trick: when you know the answer but not the correct derivation, derive blindly forward from the givens and backward from the answer, and join the chains once the equations start looking similar. Sometimes the graders don't notice the seam.

Explanation

In college courses with a very large number of students (picture the huge, tiered, amphitheater-style lecture halls shown in any movie or TV show about college), teaching assistants are often employed to help the professors grade student work. In math and science courses, students are expected to solve the problems and show their work as supporting evidence. Due to the high volume of work to grade, whether it's being done by the professor or a TA, the grader may get lazy and look for correct answers and the existence of work without checking that the work is accurate.

The math shown in this comic switches from $\sqrt{\quad}$ being square root notation to it being division notation midway. That is an illegal operation.[citation needed] But the correct answer is reached anyway, because 27 is the correct answer to 3×9 , $3\sqrt{81}$, and $81 \div 3$.

More generally, this pattern holds true for any number and its square; namely, $xy = y^2 \div x$ whenever $y = x^2$.

The title text describes another technique usable when you remember the answer but not the calculations. It requires modifying the equation and the answer at the same time, hoping that at one point they'll look similar. Some students picture every step in the calculations, others skip some, as they seem obvious to them. Merging the equations once they look similar may trick the examiner into thinking that the step between them is

obvious to the student, even if they ARE checking the calculations. The side effect (not mentioned) is that while doing this, you may actually realize what the calculations should be.

Alternatively, the title text could be a description of the calculations shown in the comic.

#760: Moria

June 30, 2010



Someone should really bring them a ladder and remind them to build the **Endless Stair** *first* next time.

Explanation

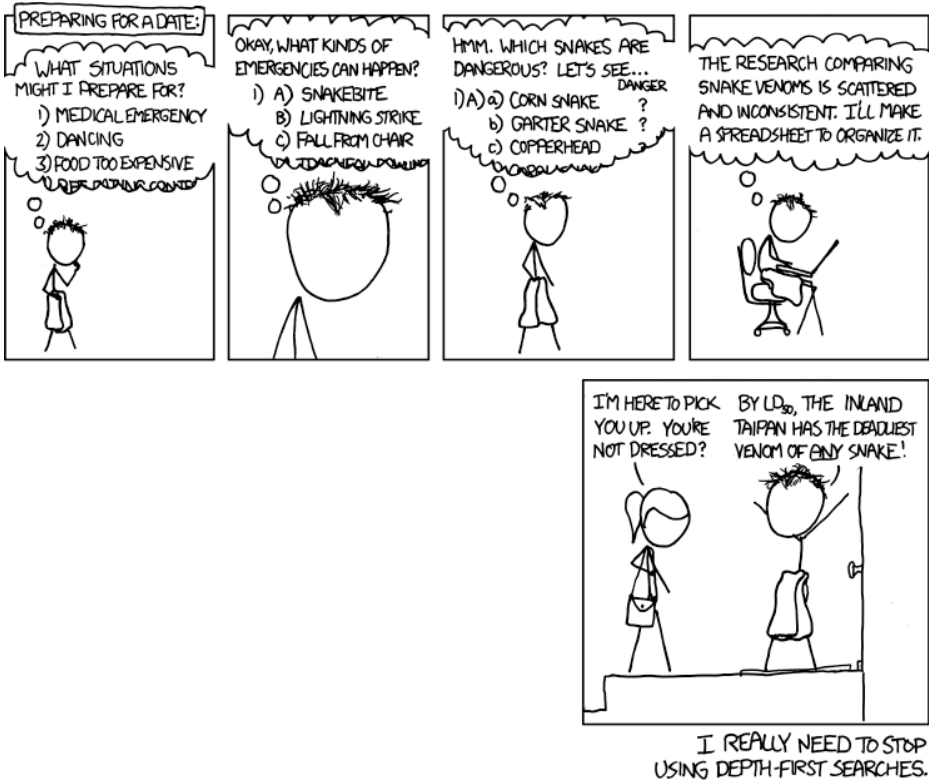
This is Randall's take on the story of Moria in the fantasy story *The Lord of the Rings*. In the original the dwarves, hunting for the precious metal mithril dug so deep that they awoke a Balrog — a Maia corrupted by Melkor. Gandalf is telling about the story to four hobbits standing next to him. One of the hobbits has apparently read *The Lord of the Rings*, because he asks if the dwarves "awoke a terror of shadow and flame", but then Gandalf says that they were merely trapped in their hole and couldn't get out.

However, Gandalf's final line may be a hint that the comic's version is closer to the original than it appears — in the story, the adventuring party discovers a journal of the last dwarves to occupy Moria. The last page starts ominously: "We cannot get out. We cannot get out." That memorable sentence is used again near the end of the page as the impending final orcish attack is described by the now-dead dwarves, and repeated by Gimli as they reflect on the terrible news, lending a much darker tone to the comic's punchline.

The title text suggests a mundane solution to their problem — a long ladder. The Endless Stair was a very long staircase from the lowest dungeon up to the top of the mountain above Moria: the title text suggests that the dwarves should have constructed that prior to entering the depths.

#761: DFS

July 02, 2010



A breadth-first search makes a lot of sense for dating in general, actually; it suggests dating a bunch of people casually before getting serious, rather than having a series of five-year relationships one after the other.

Explanation

In this comic Hairy is preparing for his date with Ponytail, and has just finished with a shower, as seen from the fact that he is wearing a towel around his waist.

He is also preparing mentally by thinking about which situations he might encounter during the date. Since he cannot know for sure he is performing a "blind search" in his head. When doing a blind search in computing, there are two main tactics—depth-first search (DFS), and breadth-first search (BFS).

Hairy uses the DFS technique, as indicated in the comic title, which means going as far as you possibly can down one path before looking at other possibilities. This turns out to be a bad idea, as Hairy's searches takes him out on a tangent. Instead of preparing for his date, Hairy instead spent the whole time doing research on snake venom, to the exclusion of even getting dressed in time for the arrival of his date. The way the last panel is the only panel and at the far right in the second row vs. four panels in the top row, indicates all the time he has used on DFS. And although he may realize his mistake, throwing up his arms, he has to tell Ponytail the fact he has found out that the inland taipan's has the deadliest venom of any snake (see more below).

By contrast, a breadth-first search will look only minimally into a topic before moving on to another; any new depth exposed by this minimal check will be added

to a list of stuff to do later. This would have allowed Hairy to briefly check many more things within the time allotted, and probably still have been able to get dressed if, in dealing breadth-first in the first layer of concerns, he quickly identified (and prioritized/satisfied) the need to be properly dressed and ready to go out.

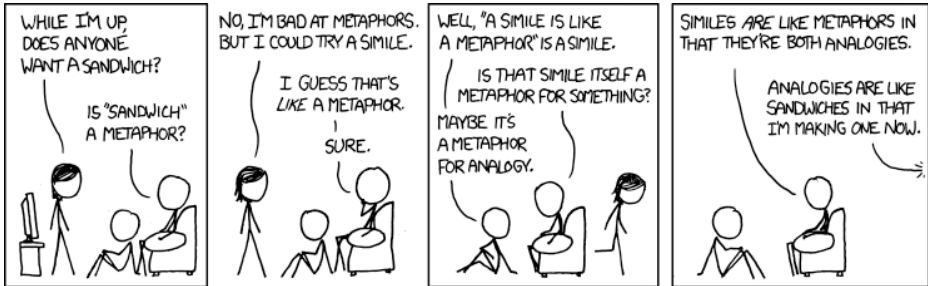
The relationship advice given in the title text on using breadth-first search may not be meant too seriously. However, one might be more sure about what kind of person one is looking for after already having dated a few people. But by then, the right one might have slipped by. It is by no means certain that you can return to one of the first persons you dated after having dated another dozen.

It is, however, not very useful, if you wish to have a stable family life, to "only" be with a person for five years. So DFS is for sure a bad way to find out who you wish to spend you life with. One might conclude that blind search is not a good way to find your significant other. But for most people, there is no other way to search.

DFS and BFS make another appearance in 2407: Depth and Breadth, together with variations based on them.

#762: Analogies

July 05, 2010



I just call all of them 'synecdoche'.

Explanation

This comic revolves around the similarities (and differences) between the concepts of "analogy", "simile" and "metaphor" (as well as "synecdoche", "sandwich" and "sex").

When Megan stands up and asks Cueball and his Cueball-like friend if anyone would like a sandwich, she is very literally meaning that she will would go an make a sandwich in the kitchen, and she would make one for either of them if they wished.

Cueball is thus cheeky when he asks if this is a metaphor, because in that case the metaphor would be a reference to sex sandwich, in which case the two Cueballs would make up the bread in the sandwich with Megan as the meat in the middle, in a special kind of threesome (NSFW).

Megan effectively turns him down by saying she is bad at metaphors, thus indirectly saying that she is determined not to understand his innuendo, rather than actually understanding it and having to reply to his smart remark. As she probably also knows him rather well, she also knows that by introducing the similar word simile, she immediately turns the focus off the poor sexual joke to a discussion of language, and she is able to leave the room while the guys are discussing this rather than smirking over the sexual joke.

She also manages to make the punch line after the friend introduces analogy, as she is now actually making a sandwich and using this sentence to make an analogy.

The dictionary defines a "metaphor" as a figure of speech that uses one thing to mean another and makes a comparison between the two. For example, Shakespeare's line "All the world's a stage" is a metaphor comparing the whole world to a theater stage. Metaphors can be very simple, and they can function as most any part of speech. "The spy shadowed the woman" is a verb metaphor. The spy is not literally her shadow, but he follows her so closely and quietly that he resembles one.

A "simile", also called an open comparison, is a form of metaphor that compares two different things to create a new meaning. But a simile always uses "like" or "as" within the phrase and the comparison is more explicit than a metaphor. For example, Shakespeare's line could be rewritten as a simile to read: "The world is like a stage." Another simile would be: "The spy was close as a shadow." Both metaphor and simile can be used to enhance writing.

An "analogy" is a bit more complicated. At the most basic level, an analogy shows similarity between things that might seem different — much like an extended metaphor or simile. But analogy isn't just a form of speech. It can be a logical argument: if two things are alike in some ways, they are alike in some other ways as well. Analogy is often used to help provide insight by comparing an unknown subject to one that is more familiar. It can also

show a relationship between pairs of things. This form of analogy is often used on standardized tests in the form "A is to B as C is to D".

There is a famously confusing analogy, often falsely attributed to Einstein, that attempts to explain how radio works: "You see, wire telegraph is a kind of a very, very long cat. You pull his tail in New York and his head is meowing in Los Angeles. Do you understand this? And radio operates exactly the same way: you send signals here, they receive them there. The only difference is that there is no cat."

"Synecdoche" (from the title text) is the naming the whole of something by referring to a part, or vice versa. E.g. using "the Internet" when meaning "the World Wide Web", which is only a part of it; or using "Band-Aid" when referring to any adhesive bandage. Randall is saying that he doesn't really understand the difference between them, but instead of using one of the names as a placeholder for them all (that is, as a synecdoche), he actually uses the word 'synecdoche'. What a mind he has.

#763: Workaround

July 07, 2010

SEE, I'VE GOT A REALLY GOOD SYSTEM:
IF I WANT TO SEND A YOUTUBE VIDEO
TO SOMEONE, I GO TO FILE → SAVE, THEN
IMPORT THE SAVED PAGE INTO WORD. THEN
I GO TO "SHARE THIS DOCUMENT" AND
UNDER "RECIPIENT" I PUT THE EMAIL
OF THIS VIDEO EXTRACTION SERVICE...



I'LL OFTEN ENCOURAGE RELATIVES TO TRY TO SOLVE
COMPUTER PROBLEMS THEMSELVES BY TRIAL AND ERROR.

HOWEVER, I'VE LEARNED AN IMPORTANT LESSON: IF THEY
SAY THEY'VE SOLVED THEIR PROBLEM, *NEVER* ASK HOW.

I once worked on a friend's dad's computer. He had the hard drive divided into six partitions, C: through J:, with a 'Documents' directory tree on each one. Each new file appeared to be saved to a partition at random. I knew

enough not to ask.

Explanation

A relative of Cueball is depicted, who explains how he goes about sending a YouTube video to someone. The relative appears to be a stereotypical 'non-computer person', perhaps the father or grandfather of Cueball. The relative explains how he first saves a web page and opens it in Microsoft Word, then uses the 'Share' feature in Word to generate an email that contains the web page reformatted as a Word document, then sends that email to a service that extracts YouTube videos. Perhaps this service would then email back a link to some extracted file on some server, and this link could in turn be copied and pasted in another email, which could finally be sent to the intended recipient. It's all very complicated.

The premise is that, without the proper know how, the solutions less computer-literate people will find to achieve some task on a computer will usually end up convoluted, sadly unaware that their method is subpar without a proper frame of reference. In this case, a much faster and simpler route would be to simply copy the address of the YouTube video from the address bar in the browser, then paste the address in an email to the intended recipient.

The caption goes on to muse that, due to this, though Randall encourages his relatives to solve their computer problems on their own by trial and error, he has to resist the urge of asking them the method they used as the suboptimality will cause Randall to be exasperated.

Telling them a more optimal solution would likely upset their relative since they are now "damned if they do, damned if they don't" regarding Randall being dissatisfied with them, and any supposed time saved by Randall not having to do tech support for his family would also be rendered moot.

The title text gives another example of bizarre scenarios that people who don't understand computers can end up with. Partitions on a hard drive are separately managed regions of storage, usually used for recovery purposes or to load different operating systems. While some systems and users have a separate partition to store one's personal files so as to allow wiping the partition containing the operating system and reinstall without those files being affected, using multiple partitions to store files offers no benefit compared to run-of-the-mill folders (and, in fact, might be worse as unlike folders partition sizes are not easy to change). A truly grotesque scene.

#764: One Two

July 09, 2010



PRIMITIVE CULTURES DEVELOP
SESAME STREET.

Cue letters from anthropology majors complaining that this view of numerolinguistic development perpetuates a widespread myth. They get to write letters like that because when you're not getting a real science degree you have a lot of free time. Zing!

Explanation

The comic parodies Sesame Street, an American children's TV show. The Count is a character in Sesame Street who teaches counting to viewers. The Count usually laughs after counting numbers, an innocent version of the sinister laugh that is a stereotype of old Hollywood horror films.

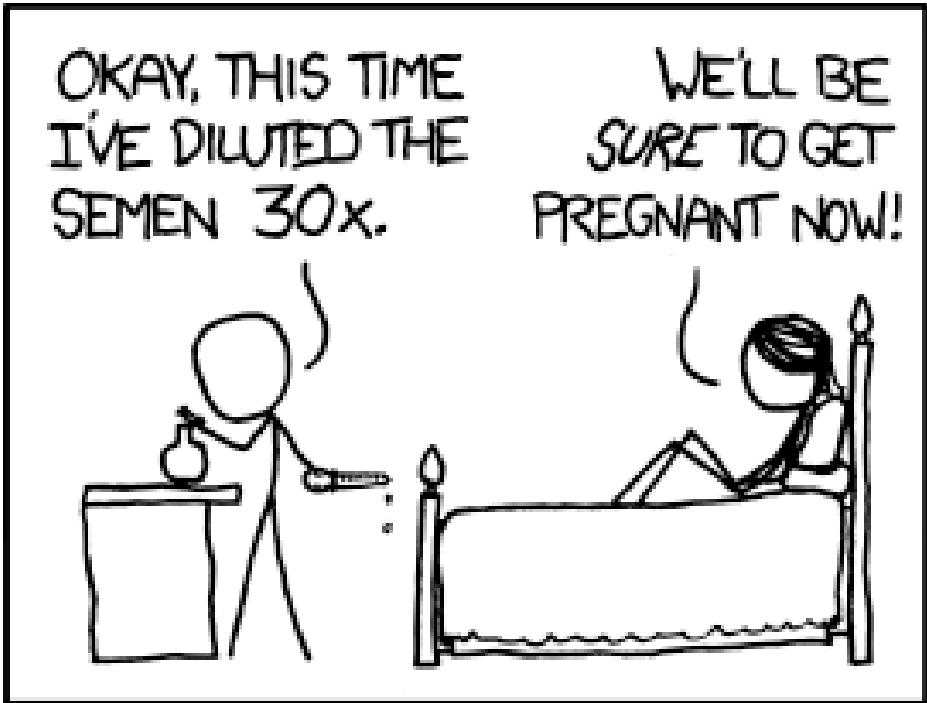
In the book *One Two Three ... Infinity*, the writer describes African tribes that only have words for numbers up to three and their inability to distinguish or comprehend larger numbers. The Pirahã language of Brazil was originally thought to only have numerical terms for one, two, and many, although it is now thought these words are relative terms like "few" rather than absolute terms like "one." Similarly, see Edmund Blackadder try to teach Baldrick to count beans. Also worth mentioning, some conlangs (Most notably Toki Pona whose two primary systems are "1, 2, many" and "1, 2, 5, 20, 100"), only have very limited number choice, while the Discworld's trolls are less limited than their contemporaries imagine and may even be linguistically related to whoever is behind the comic's Count.

In the title text Randall predicts that anthropology majors will write to complain that this view of primitive tribes is a myth no longer held true by today's anthropologists. He makes a jab at them saying they would have time to write letters to complain about things because they don't have to spend time doing real

science and thus real research.

#765: Dilution

July 12, 2010



**BELIEF IN HOMEOPATHY IS NOT,
EVOLUTIONARILY, SELECTED FOR.**

Dear editors of Homeopathy Monthly: I have two small corrections for your July issue. One, it's spelled "echinacea", and two, homeopathic medicines are no better than placebos and your entire magazine is a sham.

Explanation

Homeopathy is the belief that poisons, bacteria, and other harmful substances can actually cure the diseases they normally cause, if they are administered in sufficiently dilute form. The normal procedure is to prepare a solution, then successively dilute it with water or alcohol by multiple factors of 10 and shake it. In the medical world, it's known to be completely ineffective, with countless scientific studies repeatedly showing it to have no more effectiveness than a placebo. Keep in mind that homeopathy was invented when standard treatments included blood letting, drugs made with mercury and arsenic, and natural remedies made with nightshade and hemlock. So doing effectively nothing like homeopathy had better results than doing harm to an individual.

Here we find Cueball, a firm believer in homeopathy, applying the idea to fertility by diluting his semen. 30X means that the semen has been diluted with water at a 1:10 ratio 30 times, so the solution contains 1 part semen to one-nonillion (1,000,000,000,000,000,000,000,000,000,000) parts water. Since the average ejaculation contains 200 to 500 million sperm cells, this means the solution Cueball is holding has a 3.5×10^{-20} % chance of containing even a single sperm cell. Clearly, Megan will not be getting pregnant from this, so she and Cueball will not be passing on their genes to the next generation, which is why the comic states that "the belief in homeopathy is

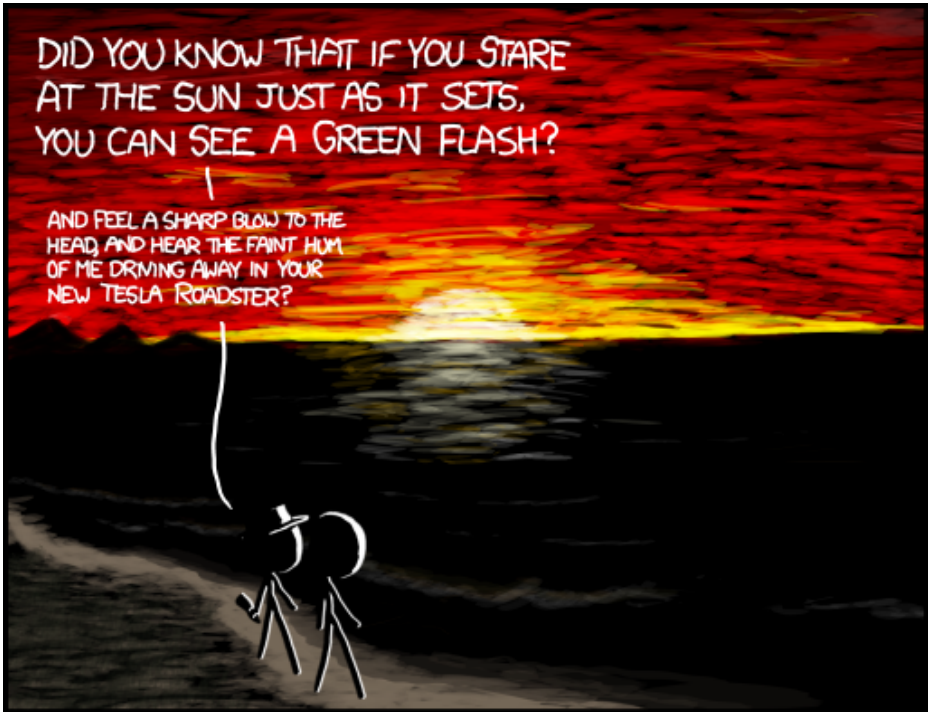
not, evolutionarily, selected for".

According to the belief of homeopathy, diluted sperm should not help in getting pregnant, but help to cure the symptoms, e.g. pregnancy, caused by it[citation needed]. So even if diluting it 30X, would have a homeopathic effect, it would be the opposite of the one Cueball states he wants to achieve.

Echinacea is a genus of flowers commonly used in herbal remedies to stimulate the immune system. Scientific studies have not shown that such an effect exists. The title text is intended to represent a letter to the editors of fictitious journal 'Homeopathy Monthly', starting with a minor complaint that they seem unable to perform the basic proof-reading and fact-checking necessary to correctly spell one of the most well-known herbal remedies. This is followed up by a complete dismissal of homeopathy as a whole and the magazine in particular.

#766: Green Flash

July 14, 2010



The exact cause of the phenomenon is unknown, but it's thought to be linked to atmospheric refraction and you getting a really cool car.

Explanation

Green flash refers to an optical phenomenon which occurs at twilight (early dawn or late dusk), where a flash of green light can be seen at the very edge of the sun. Black Hat (who could potentially be White Hat, but this is more Black Hat behavior) attempts to distract Cueball with this event so that he may knock out Cueball with the bottle in his hand and steal his new car, a Tesla Roadster. If the bottle is green, it would also be the cause of the green flash.

The title text simply continues this, wherein Black Hat (White Hat?) jokes that green flashes are actually caused, at least in part, by the fact that Cueball has a cool car worth stealing.

#767: Temper

July 16, 2010



1981: AN AUDIO RECORDER ON THE SET CATCHES FRED ROGERS FIGHTING WITH HIS WIFE.

Mr. Rogers projected an air of genuine, unwavering, almost saintly pure-hearted decency. But when you look deeper, at the person behind the image ... that's exactly what you find there, too. He's exactly what he appears to be.

Explanation

Actor Mel Gibson was the subject of controversy a few days before this comic came out because a telephone rant was taped and released to the public. He laughed off the call, saying simply "I have a bit of a temper." In a broader sense, it's almost cliché for celebrities who cultivate friendly and charming public personas to be revealed as behaving badly in their personal lives. Most savvy viewers will tend to be suspicious of any celebrity who always seem kind and caring, as such could be part of a carefully curated image, and does not necessarily reflect the person's true nature.

Fred Rogers was a minister and television personality best known for his children's educational show *Mister Rogers' Neighborhood*, which aired on American public television for over 30 years. Because of his program's popularity and longevity, 'Mister Rogers' became not only an icon of children's programming, but a beloved figure in American culture, with generations of children growing up with him.

Rogers' on-air persona was consistently warm and friendly, actively trying to make children feel special and loved, and teaching lessons about creativity, character, and kindness. While urban legends emerged about him having some kind of dark past, all of these were entirely false. In truth, his life was entirely untainted by any kind of real scandal, and people who knew him uniformly agree that he was just as caring and compassionate in real

life as he was on the air.

This comic contrasts Rogers with a typical celebrity scandal. It presents Rogers fictionally recorded having a fight with his wife. The title and caption set up the expectation of a dramatic, Mel Gibson-style explosive rage, but the actual comic presents Rogers handling a family conflict with a calm, open, and loving attitude consistent with his real personality. The title text does the same, setting up for a shocking reveal and failing to meet it.

#768: 1996

July 19, 2010



College Board issues aside, I have fond memories of TI-BASIC, writing in it a 3D graphing engine and a stock market analyzer. With enough patience, I could make anything ... but friends. (Although with my chatterbot experiments, I certainly tried.)

Explanation

There has been a stunning amount of progress in pretty much any measurable dimension of technology since 1996. We laugh at our prior naivete, pointing out that what would be a non-functionally awful computer now was considered state of the art at that time. Likewise with a Palm Pilot, arguably a precursor to today's omnipresent smartphones. Texas Instrument (TI) calculators, however, appear to have been left behind, not having made any significant advances (or price drops) since the newly discovered issues of the US computer magazine Computer Shopper were published. Thus, while we groan at how awful our state of the art technologies truly were in 1996, we are reminded that some technologies have remained in relative stasis over the years.

The title text mentions College Board, the organization that runs the SAT and AP tests. It alludes to the fact that College Board's practice of only allowing (or requiring) specific models is at the root of how TI can charge high prices for stagnant technology, although these days they allow numerous models including the (previously) open-source Numworks calculator.

The title text then reminds us that when they were new, TI calculators were relatively powerful tools if you knew how to use them. TI-Basic was a fairly versatile programming language that could be used to make anything from games to reference files to computational programs.

The second half of the title text is a reminder to those of us who felt like gods for knowing how to program that power comes at a price—in this case, the power to program a calculator costs friends. Since, as of this comic's publication date, no program yet devised had truly passed a Turing test, even the most sophisticated Chatterbot (program designed to mimic conversation) couldn't quite qualify as a friend. As of February, 2022, however, a study by a professor in the Stanford School of Humanities and Sciences published a paper demonstrating that Open AI's ChatGPT could in fact pass the Turing test. This proves ChatGPT could act as a "friend" to users as Randal seems to wish was possible on TI-Basic. Furthermore, a 2024 youtube video adds ChatGPT functionality to a TI calculator, albeit with some hardware modifications to connect to the internet.

Being unable to "make" friends was also later mentioned in 866: Compass and Straightedge.

While many people aren't aware of them, TI does make more modern calculators in their TI-Nspire series, although they were introduced after this comic was published. The newest versions have color screens and (finally!) non-BASIC programming support through Lua and Python. However, most K-12 schools in the US still use the TI-84 calculator series, which is based off the calculator shown in the comic. (Although it also supports Python and has color screens on the higher end models.)

#769: War

July 21, 2010

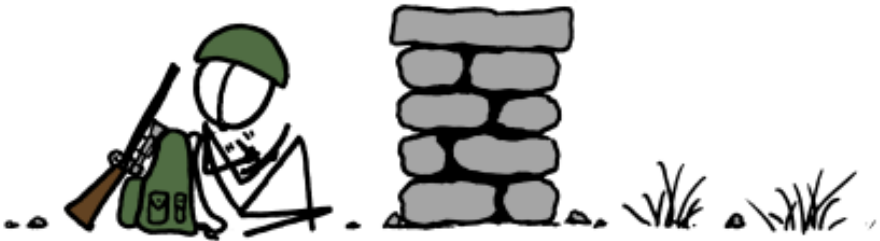
MY DEAREST CORDELIA,

IT HAS BEEN FAR TOO LONG SINCE I LAST GAZED
UPON YOUR LITHE AND SUPPLE BODY THROUGH MY
TELESCOPIC SIGHTS, AND I FEAR YOU MAY HAVE
FOUND A SUPERIOR VANTAGE POIN-

BLAM! BLAM! BLAM!

-A SPLENDID EFFORT, MY LOVE, BUT YOUR SHOTS
FIND ONLY A DECOY, AND REVEAL YOUR POSITION ATOP
THE MAINTENANCE SHED.

I PRAY THIS MISSIVE AND MY GRENADES FIND YOU WELL.
WAR IS HELL.



They offered to make me a green beret, but I liked my regular one. Although it gets kind of squashed under my helmet.

Explanation

This comic seems to be a parable about the perils of love during wartime. Our protagonist is seen here leaning against his pack behind a low wall, surely a good hiding spot for any gentleman with a rifle and scope. Judging by the letter he's in the midst of writing, he has a complex relationship with Cordelia. On the one hand, she's attractive. On the other hand, she's a hostile combatant, as evidenced by the shots fired mid-missive. Cordelia's fire works against her, though, as her volley of shots has revealed her own position atop the maintenance shed. We can presume that in a matter of minutes, this love affair will go sour as the love letter is wrapped around a live grenade and "delivered," so to speak. War is indeed hell.

As to the title text, the green berets are worn only by Special Forces soldiers. It takes a lot of training to become a green beret, and as evidenced by our protagonist's clever use of decoys to outwit a sniper, he may be qualified for the honor. However, evidence for his naiveté is given immediately thereafter, as he confesses that he wears a beret under his helmet — thus revealing our protagonist's true identity as Beret Guy and explaining how he fell in love with an enemy soldier actively trying to kill him.[citation needed] Then again, he does not have a choice, since he has stapled the beret on his head.

"Cordelia" is possibly a reference to Cordelia

Rosalind—the sniper from the miniature game *Anima: Tactics*. Alternatively, it may be a reference to Cordelia Naismith from Lois McMaster Bujold's *Shards of Honor*. In the book, Cordelia Naismith and Lord Aral Vorkosigan are on opposite sides of the Beta-Barrayar war, and fall in love while forced to spend a week in each other's company on an unpopulated planet. This may be further corroborated by the green color of Beret Guy's uniform, which is very similar to the color used for the uniforms of the Barrayan Imperial Service.

It is also possible that Beret Guy and Cordelia are playing a video game, in a virtual reality, or in some similar context in which being blown up by grenades would not actually kill Cordelia, which would explain why Beret Guy would write such a missive.

#770: All the Girls

July 23, 2010



You know that I'll never leave you. Not as long as she's with someone.

Explanation

A young couple (Cueball and Megan) are in love. In the first panel, Cueball says he's lucky to have Megan, a perfectly fine thing to say to someone when you're in love.[citation needed] In the second panel, Cueball tells Megan he loves her most out of all the girls in the world, which is again a perfectly fine thing to say when you're in love. Trouble sets in, however, in the third panel, where Cueball offers his qualifying statement, that he loves Megan the most of the subset of girls who also love Cueball back.

In the title text, written in Cueball's voice, we have another compliment/qualifier pair. Cueball assures Megan that he'll never leave her—so long as some other girl is with someone. Cueball clearly has an unrequited love for another, and so really is being as unreliable and selfish as he initially appeared.

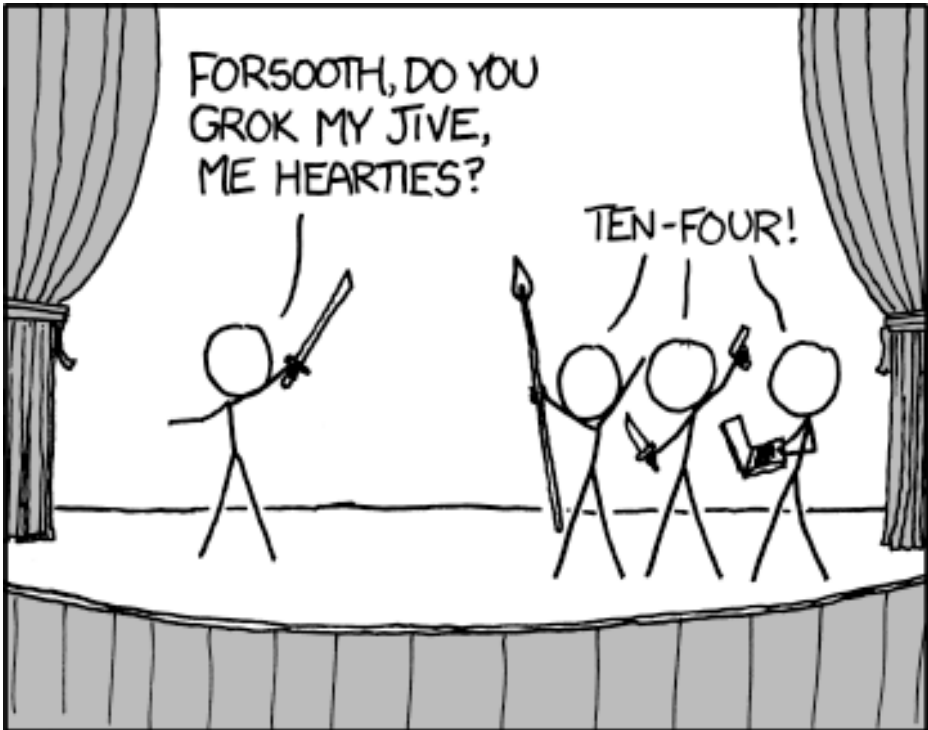
This comic is related with stable marriage problem, which is usually stated as: Given n men and n women, can they all be married off in such a way that there is no possible "adulterous" pairing that both the man and woman would prefer over their current partner? It turns out the answer is yes, and there are even algorithms that can be used to find such a set of marriages. However, such algorithms don't usually give people their first choice, just their first choice among potential partners who prefer them to all the alternatives. The algorithms also favor either the men or the women, so one side will

typically get closer to their ideal preferences than the other. Such algorithms do get used in situations like assigning medical students to residencies (technically it's a polygamous generalization, but it's basically the same idea), in which case it's biased in favor of the medical students.

In the comic Cueball and Megan could be a couple arranged through a stable marriage algorithm. In most cases that would mean that they both have potential partners that they would prefer over the one they're with, and the only reason that they aren't with that person is that their love was unrequited. That leaves both of them with a certain amount of emotional baggage that most people would consider detrimental to stable marriage. In short, while a stable marriage algorithm may provide good solutions to certain matching problems, it may not be the best way to produce actual stable marriages.

#771: Period Speech

July 26, 2010



A FEW CENTURIES FROM NOW, ALL THE ENGLISH
OF THE PAST 400 YEARS WILL SOUND EQUALLY
OLD-TIMEY AND INTERCHANGEABLE.

The same people who spend their weekends at the Blogger Reenactment Festivals will whine about the anachronisms in historical movies, but no one else will care.

Explanation

The actors on this stage are using language and technology from wildly different time periods:

- "Forsooth" is an interjection from Elizabethan times (1558–1603).
- "Grok" is a word from the 1961 Robert Heinlein novel *Stranger in a Strange Land*.
- "Jive" is African American slang from the 1940s to the 70s.
- "Me Hearties" is popular 'pirate speak', which purports to come from the Golden Age of Piracy (1650-1726) but was actually popularized by the 1950 film *Treasure Island*, based on Robert Louis Stevenson's 1883 novel of the same title. Actor Robert Newton played the pirate Long John Silver with an exaggerated "West Country" accent (his native dialect, and one that would have been heard due to the area's established involvement in maritime business) and it became associated with all pirates.
- "Ten-Four" is police code for "Yes" and was popular during the 1970s CB radio craze.

Put together, the exchange roughly translates to "Do you truly understand what I'm saying, my friends?"/"Yes, we understand!". The characters also combine archaic weapons like a spear and a sword with a presumably modern handgun and a laptop, adding to the growing heap of anachronisms.

Randall's contention is that hundreds of years from now, people will make similar errors that we do today when depicting historical items and language. Modern movies, fiction, and other forms of media that depict history often confuse terms, items, and equipment that were in one place and time period and place them in another, but few people notice because to them, all of it fits under the very broad category of "old, historical things" - only those with an interest in history really notice or seem to care. Thus following this trend, in the future, things like laptop computers and "grok my jive" will seem just as historical and "old-timey" as a spear or the saying "Forsooth!", except to those who participate in such things like "Blogger Reenactment Festivals", as mentioned in the title text.

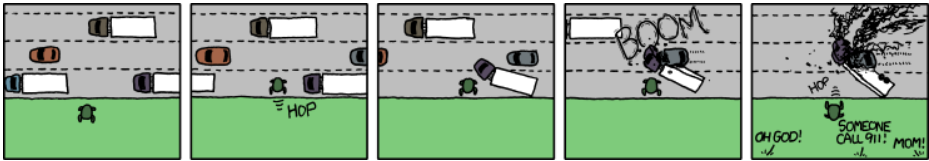
For instance, take a suit of full plate armor. To most people, plate armor is a "Medieval thing". So thus, when depicting King Arthur, a figure from 500 to 800 AD (if he even existed at all), one would (and has) put him in a suit of full plate because he is "medieval" and that is the stereotypical equipment of a Medieval figure. In actual fact, plate armor only came about after 1350, many centuries after King Arthur would have lived, and it coexisted alongside firearms for a very long time. King Arthur would have worn chainmail, but all of this would be lost on an average person watching a movie about King Arthur, to whom chainmail and full plate are interchangeable under the label of "historical armor" in their minds (though may represent an 'underclass' and 'overclass' of men-at-arms, for each respective type of

main protection). It is not much of a jump from a span of 500 to 800 years of equipment being considered interchangeable to 1500 years of equipment and language being interchangeable. A similar confusion of "interchangeably old things" is seen in the title text to 2396: Wonder Woman 1984.

The title text likely refers to 239: Blagofaire, which features the said "Blogger Reenactment Festivals".

#772: Frogger

July 28, 2010



I understand you and your team worked hard on this, but when we said to make it more realistic, we meant the graphics.

Explanation

Frogger is a classic video game introduced in 1981. The aim of the game is to safely get a frog across a busy road and a river to a lily pad at the top of the screen.

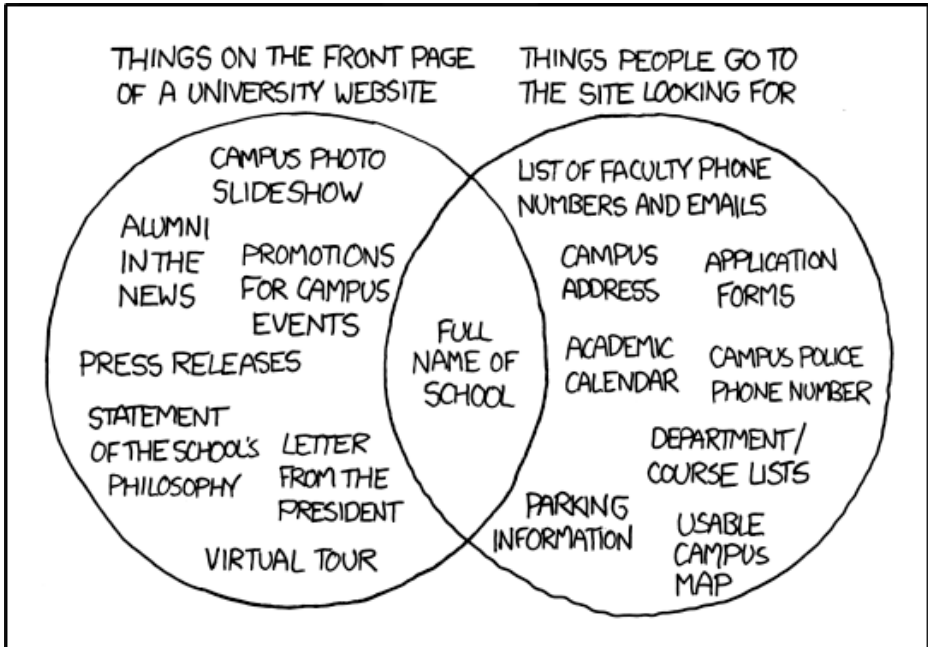
The title text reveals that a team of programmers misinterpreted a task to make the game "more realistic", i.e. with better graphics, and instead made the trucks swerve to avoid the car-sized frog, causing another vehicle to crash into the truck resulting in a serious road accident. This is instead of the traffic just inexorably moving at a constant rate in their assigned lanes and disregarding the movements of the frog (as in typical Frogger gameplay), who is normally the only one who ever needs to take evasive action or suffer the consequences.

The game continues to introduce increasing drama with the reactions of off-panel bystanders.

This is similar to the idea behind the modification of the game in 873: FPS Mod, in which realism makes a video game much less enjoyable.

#773: University Website

July 30, 2010



People go to the website because they can't wait for the next alumni magazine, right? What do you mean, you want a campus map? One of our students made one as a CS class project back in '01! You can click to zoom and everything!

Explanation

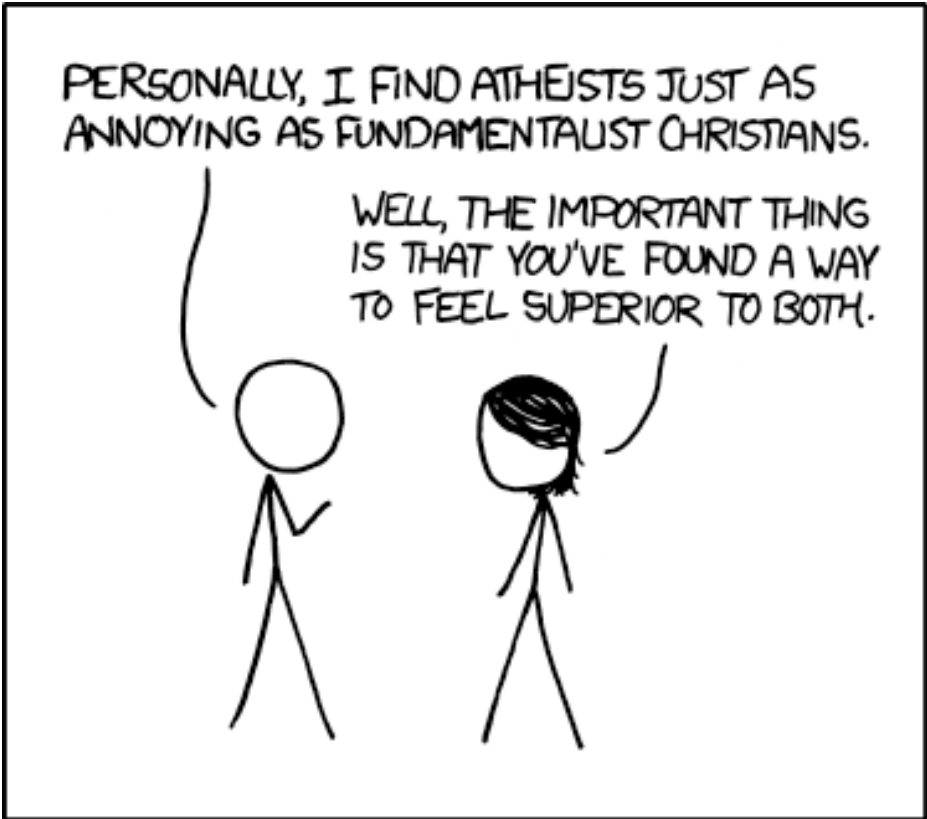
This comic uses a Venn diagram to point out that there is often a significant disparity between what a university displays on the front page of its website and what users — particularly prospective students — are primarily interested in finding there.

This is often because those who are making the university website instinctively believe, from their perspective, that the website should contain things that the university is proud of, or that they personally find useful, so they are unable to look at it from the perspective of a person who is new on campus and simply wants to know what number to call for campus security. Thus, simple details like contact information and university data are often overlooked.

The title text presents a satirical response from the school defending their site design, consisting mostly of PR worthy of an alumni magazine (a publication that is seldom anticipated so eagerly). It also uses sarcasm to make fun of university websites that have wildly out of date site design (web technology was relatively primitive in 2001)[citation needed] and a CS (Computer Science) student built it instead of a professional.

#774: Atheists

August 02, 2010



'But you're using that same tactic to try to feel superior to me, too!' 'Sorry, that accusation expires after one use per conversation.'

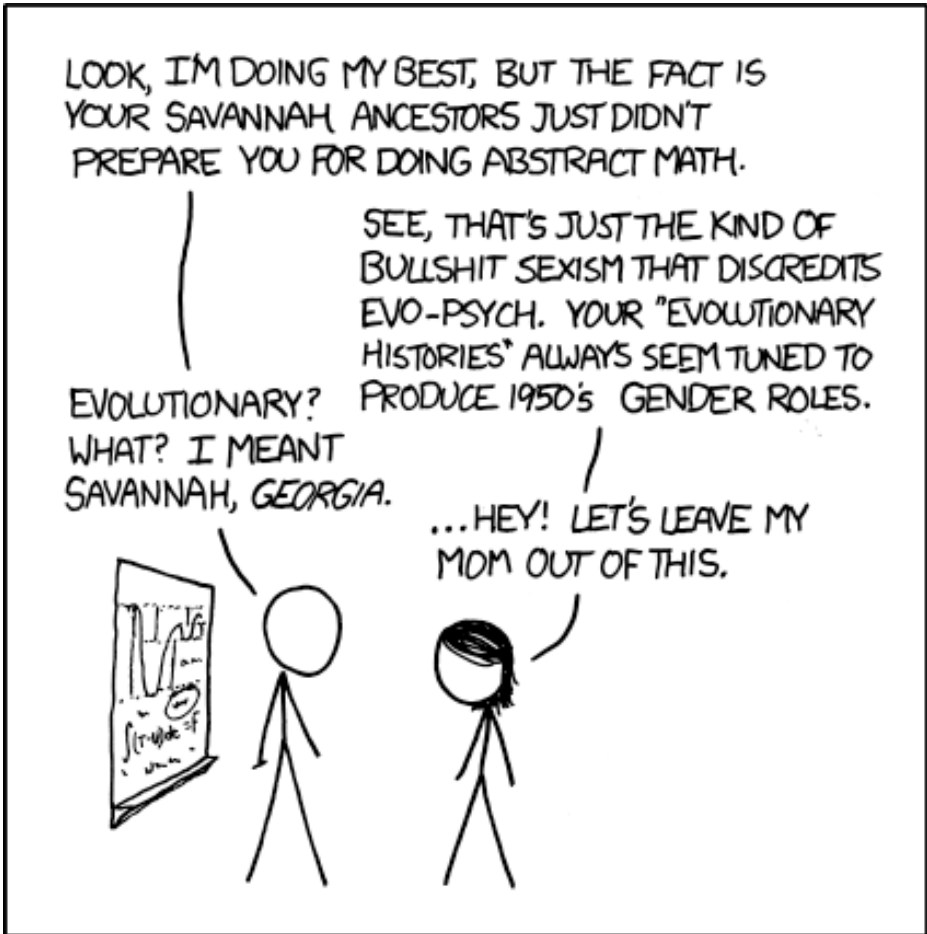
Explanation

In public debates, some fundamentalist Christians and some atheists, while having different opinions, can behave surprisingly similar. Both can be very dogmatic about their beliefs, and be very disrespectful and accusative towards people of the other standpoint. Cueball is blaming both parties for being annoying. Megan sarcastically remarks that Cueball then must feel superior to just about everyone.

The title text takes this one step further when Cueball realizes that Megan's reply is just as smugly superior as his. For practical reasons (that is, the prevention of an endless, useless thought loop about your own thought process), Megan stops the tactic, by humorously stating that the statement expires after one use in a conversation. Of course, statements cannot expire.[citation needed]

#775: Savannah Ancestry

August 04, 2010



She's a perfectly nice lady from a beautiful city, and there's no reason to be mean just because she thinks a quarterback is a river in Egypt.

Explanation

First, some quick definitions: Savanna ancestry usually means our ancestors in the African savanna, millions of years ago; Savannah, Georgia, USA is a city in the United States; Evo-psych means evolutionary psychology

Cueball is apparently trying to teach Megan something mathematical, feels frustrated at his lack of success, blames that lack of success entirely on his student, and appears to use evolutionary psychology, specifically a popular trope/myth about women being bad at abstract thinking, as an excuse. Evolutionary excuses in this context are trying to lay blame somewhere other than either participant, and so can be seen as comforting, but of course they falsely place all women in an inferior position to all men, at least when it comes to "abstract math". She naturally objects to the excuse, rightly calls it bullshit sexism, and, depending on how you interpret it, may indicate this isn't the first time she's heard him say something similar.

But the twist is that he turns out not to be talking about her lower-case savanna (which may also be spelled with "h" like the city) ancestors, the ones in the African savanna of millenia ago, but rather of her very recent "Savannah ancestors", better called parents, who live in the city of Savannah. They apparently know each other well. The implication is now much more personal: that her mother didn't prepare her. Of course, Randall uses only upper case everywhere, so he has avoided giving the

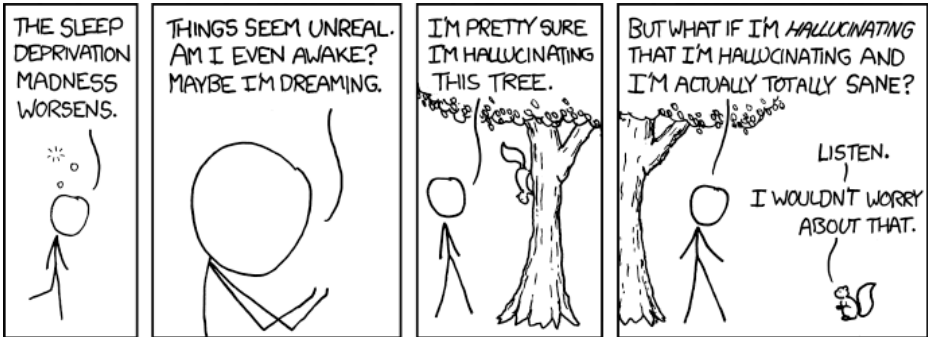
reader a clue about the misdirect-joke he is working toward.

Teasing people about their mothers in the USA — specifically that their mothers' are particularly stupid, fat or promiscuous — is a common enough theme in popular culture that there is a series of jokes that start with the words "Yo mama" that exemplify the genre. There is also an extremely common theme that the South's education system is failing; the comic combines the two.

The title text is apparently Megan starting to defend her mother, but then lapsing into a Yo Mama joke without the introducing words, showing that her mother is stupid enough to think that a quarterback (one of the positions played in American football) would be a river in Egypt. This is a conflation of the Yo Mama joke "Yo mama so stupid she thinks a quarterback is a refund!" and the common pun, "Denial (sounds like "The Nile") is not just a river in Egypt".

#776: Still No Sleep

August 06, 2010



I'm not listening to you. I mean, what does a **SQUIRREL** know about mental health?

Explanation

Lack of sleep causes hallucinations different from insanity — insane people find it very difficult or impossible to distinguish between a hallucination and reality because the part of their brain that checks for normality in a situation is also broken. Level-1 sleep hallucinations do not make it through this "sanity filter" in a sane human being.

Cueball has been sleep deprived for quite a while now, and he begins questioning his reality. He wonders if he is awake, or he is dreaming. He also wonders whether or not he is hallucinating a tree, then proceeding to question whether his hallucination might be a hallucination, and he might actually be sane. This double negative would not work mainly due to the fact that if you are hallucinating a hallucination, you are still hallucinating, and most likely you are not completely sane. In the end a squirrel comes up to him, and tells him not to worry about the possibility that he might be sane, thereby proving that Cueball is at the very least, hallucinating.

In the title text, Cueball doesn't want to listen to the squirrel because, "what does a SQUIRREL know about mental health?" This is final proof that Cueball is insane, because he cannot distinguish between a hallucination and reality (talking to a squirrel).

#777: Pore Strips

August 09, 2010



I'm sure they're a harmful tool of the cosmetics-industrial complex and all, but my goodness do those strips ever work to pull gunk out of your pores. I was shocked, disgusted, and vaguely fascinated by the result.

Explanation

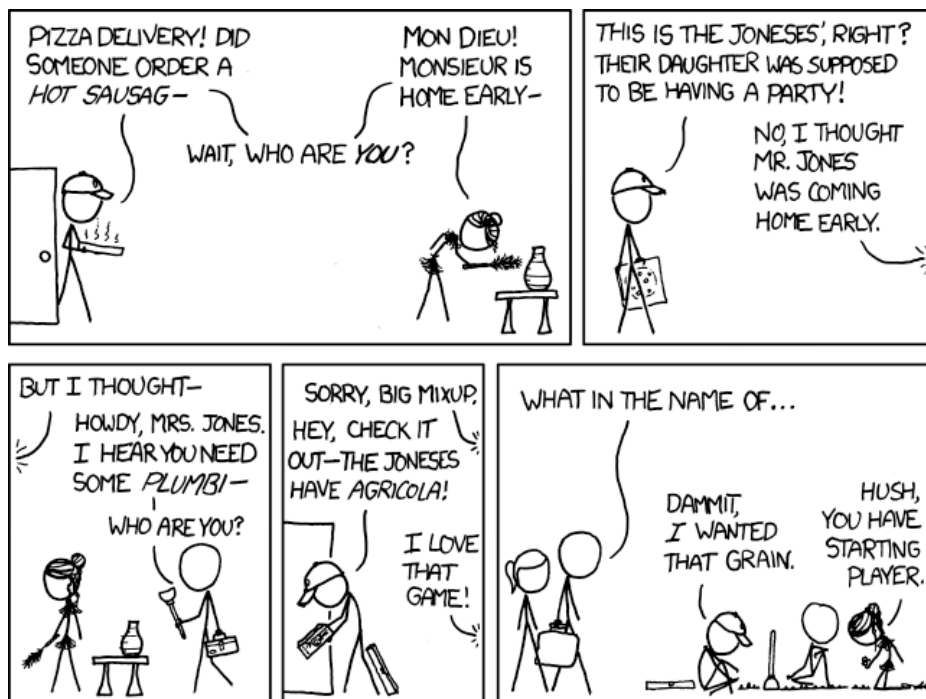
This comic shows a box of "Deep-cleaning pore strips," which are a skin-care product designed to clean your pores. You stick them on your face, wait a while, and then rip them off. When they come off, a whole lot of disgusting gunk, like dirt and body oils, is allegedly lifted out of your pores with them. The kind shown in the comic, however, is "deep cleaning", and rips out not only the user's pore gunk, but also his entire skull. However, the skull looks extremely clean, so the cleaning has probably worked.

The title text indicates that while Randall is aware that pore-cleaning strips are useless and possibly harmful products created to make money by "solving" something that isn't actually a problem, they seem quite effective at getting things out of the pores on a person's nose. In reality, pore strips only remove excess material (dead skin, oil, dirt, etc) from the surface of the skin, and do not effectively clean one's pores. Randall appears to be unaware of this fact, though this dishonesty on the part of the manufacturer may tie in to the potentially malicious nature of the 'cosmetics-industrial complex' (see below).

The title text refers to the cosmetics industry as the "cosmetics-industrial complex", which is a play on the term "military-industrial complex", coined by Dwight D. Eisenhower, the 34th president of the United States.

#778: Scheduling

August 11, 2010



'How about a little ... *family growth*?' 'Dude, that's not until round two.'

Explanation

This comic is a take on the common plots of pornographic movies. There are several "stereotypical" setups for porn videos - the suggestive pizza deliveryman ("hot sausage" being a suggestive pun), the French maid who finds out her master is home early and the wife is still away, and the plumber who, while performing routine repairs on a woman's house, becomes enamored with her (while quoting "woman in need of plumbing" as another suggestive pun). In all cases, it is usually a simple plot in order to set the stage for the sexual encounter that comprises the main focus of the pornography. In this comic, all three of these common stereotypical plots seem to have occurred at once. Realizing that none of their intended targets for sex (ostensibly, members of the Jones family) are at home, and thus they are all in the house alone with nothing to do, one of them grabs a game of Agricola off of the shelf, and they sit down to play, their confusion about this mixing of scenarios forgotten. Then the Joneses come home and are baffled by the assemblage of random professionals playing Agricola on their floor.

Agricola's objective is to build a stable family farm, contrasting with the apparently dysfunctional family in the comic.

In Agricola, one can choose among certain actions with your (very limited) "workers" (Thus it's called a worker placement game). Those actions contain for instance "Take a grain" and "Be starting player (the next round)".

Other examples are "Build a fence", "Take a cow", "Plowing" and other farm-related things.

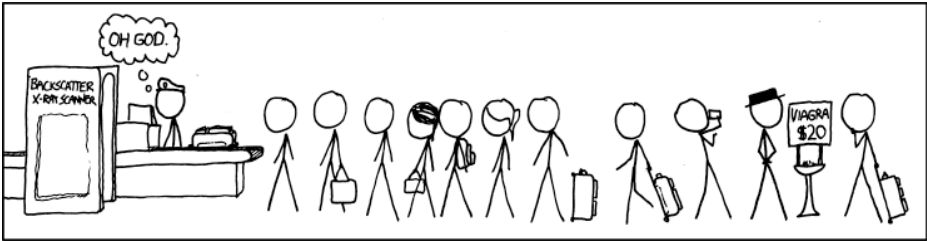
The starting player has the advantage of choosing the first item/resource/action in the next round. Once an item/action/resource is occupied by a player it can't be chosen by another player in that round. The game is easy to learn and hard to master since it needs a lot of planning and anticipating the other player's next moves. As such "scheduling" is a very important part of the game.

In the game shown, it appears that Pizza-guy has used his first move to choose "Starting Player" (for the next round), followed by Maid choosing "Take grain". Pizza-guy had previously planned to take that grain with his second action, which has now been denied by Maid. Essentially Maid is telling Pizza-guy to stop complaining, he made his decision, and too bad that his plan isn't going to work as he'd hoped (and in any case being the starting player for the next round will enable him to get the grain then).

The title text references "family growth", which could be interpreted as a cheesy euphemism for sex (in the porn-movie-plot context) or as a game mechanic for gaining another worker (in the Agricola-game context). The "not until round two" response could be used for either interpretation.

#779: Anxiety

August 13, 2010



Don't need any, thanks. I have a backscattering fetish.

Explanation

Some people are upset about airport security policies that mandate the use of backscatter X-ray machines, since the machines can create an image of the subject naked. In protest, the travellers in the lineup (or at least the male ones) are taking Viagra, sold to them by Black Hat; there is a heteronormative expectation that the male security guard will be disgusted at being forced to look at erect penises. (An expectation which is supported by the guard's thought bubble of 'Oh god', which could either be in response to seeing what Black Hat is doing or in response to an unseen person, presumably sporting such an erection, already in the scanner.)

Given Black Hat's personality, it is unlikely he himself is doing this in protest; rather he is monetizing the opportunity, a supposition reinforced by the inflated price (\$20 for a single dose) at which he is selling the medication.

An alternate interpretation is that many men feel self-conscious (or anxious, as the name puts it) about their size when flaccid,[citation needed] and thus might wish to "put their best foot forward" and look their best, as it were.

Realistically, given the size of the line, there would be insufficient time between consuming the pills and entering the scanner for them to take effect.

In the title text, one of the people in the line explains he has a fetish with being X-ray scanned, and thus doesn't need Viagra to achieve the above effect.

#780: Sample

August 16, 2010

HOW TO BECOME THE MOST HATED BAND IN THE WORLD:

RECORD AN ALBUM THAT'S NOTHING BUT
BRILLANT, CATCHY INSTANT CLASSICS
GUARANTEED POPULARITY AND AIRTIME,



WITH A SAMPLE OF A CAR HORN,
CELL PHONE, OR ALARM CLOCK
INSERTED RANDOMLY IN EACH SONG.

There are two or three songs out there with beeps in the chorus that sound exactly like the clock radio alarm I had in high school, and hearing it makes me think my life since junior year has been a dream I'm about to wake up from.

Explanation

This strip suggests that even a band with the most brilliant and catchy music would soon become the most hated band in the world if it included sound effects of car horns, cell phones, or alarm clocks in its songs. Listeners would most likely mistake the sound effects for the real thing, which could cause havoc.

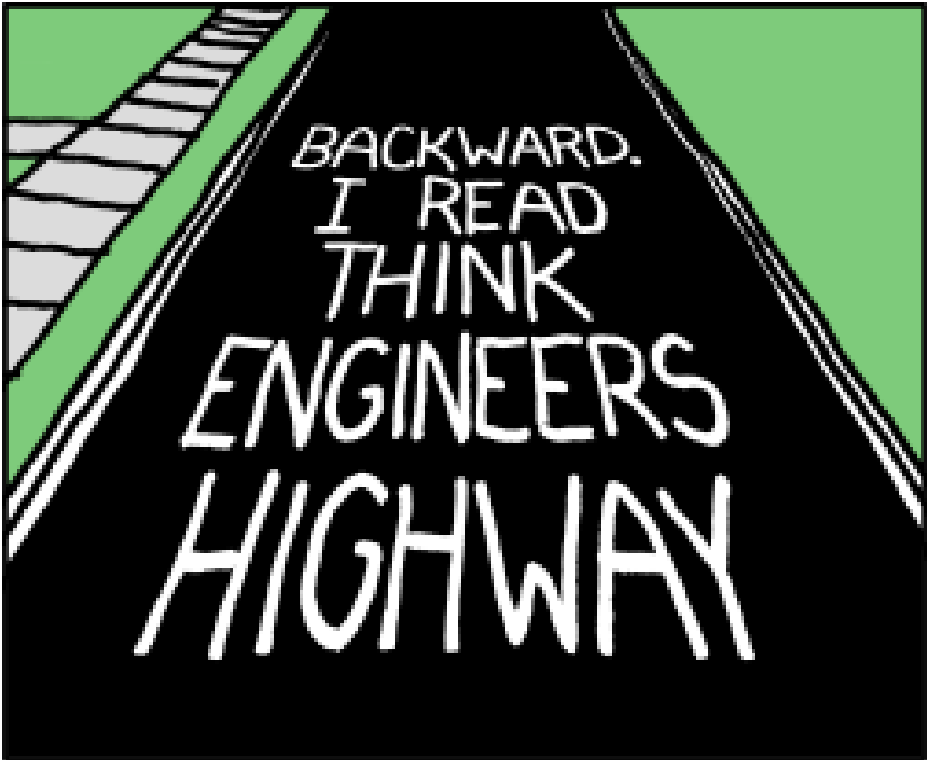
For comparison, "Indiana Wants Me", a 1970 hit single by R. Dean Taylor, had the sound of police sirens removed from later pressings because drivers were reportedly mistaking the sound effects for actual police cars and pulling over.

This can also be a reference to an unusual anti-piracy method, where P2P and Torrent networks are seeded with altered copies of songs that contain obnoxious sounds at random points.

The title text refers to the common sensation of having sounds from the real-world incorporated into a dream, especially as one is waking up. This gives a (false) sensation that is the reverse of the dream described in 557: Students. It implies that the author has been dreaming his entire life since his junior year of high school, which is obviously not true.[citation needed]

#781: Ahead Stop

August 18, 2010



They actually started the reversed-text practice in 1977 -- not for ease-of-reading reasons, but because too many people were driving backward down the highway blasting the Star Wars opening theme.

Explanation

This comic refers to how, in some countries including the US, words or instructions written on the highway are always backwards from how you would read them. It seems that the "highway" engineers write the words as if you would read them as your car goes over them. Sometimes this approach works, other times it is potentially confusing. The sentence on the comic is: Highway Engineers Think I Read Backward. Adding the period is a perfectly hilarious touch, as there are probably not too many periods on the highways.[citation needed]

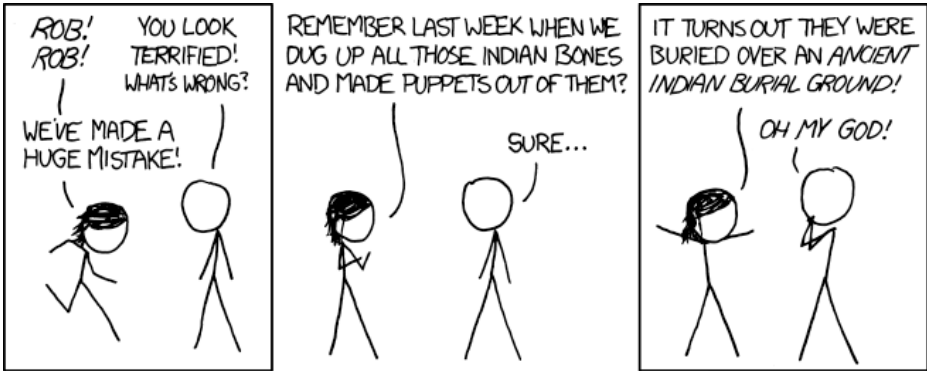
The title text is referring to how the words of the opening sequence of Star Wars Episode IV: A New Hope (released in 1977) move from the bottom of the screen to the top so that it can be read by a normal human being. However, the image text says the engineers initially reversed the text because people were driving BACKWARDS down the highway trying to re-enact the opening sequence, so they started reversing the word order to get people to drive the "correct" direction.

The title of the comic ("Ahead Stop") is also a reference to this phenomenon because the common "Stop Ahead" instruction would be written on the highway as "Ahead" and then "Stop".

This could also be a reference to Top-posting in email threads and online discussion forums, as summarized in the following comedic signature line:

#782: Desecration

August 20, 2010



It gets worse! You know that wizened old monk with the gypsy wife whose voodoo shop we smash up every day after school?

Explanation

Megan and Rob are horrified to discover that the bones they had dug up and turned into puppets were actually buried over an ancient Indian or presumably Native American burial ground. The joke is that they weren't concerned about repercussions from the Indian bones themselves, but since they were OVER an Indian burial ground that they're just as haunted or cursed, as houses built on such grounds usually are in Hollywood tropes and other fiction. They didn't consider it desecrating something holy, as per the title, until they discovered this fact. The humor comes from the fact that "digging up Indian bones" obviously makes it already an Indian Burial Ground itself, but apparently it didn't occur to Megan until after she and Rob knowingly desecrated a site at which Indians had been buried that they discovered that it was over another Indian Burial Ground, which is a common site of mystery and negative supernatural occurrences in horror films, etc. Such stories usually involve a building built on top of (over) the burial ground becoming haunted, which is why Megan uses the phrase above.

A common trope in horror fiction is that anyone defiling an ancient Indian burial ground will have a horrible curse cast upon them. Another common trope is having a curse cast upon oneself by a gypsy or voodoo woman, or a wizened wizard or monk as mentioned in the title text.

The puppets mentioned might be a reference to voodoo

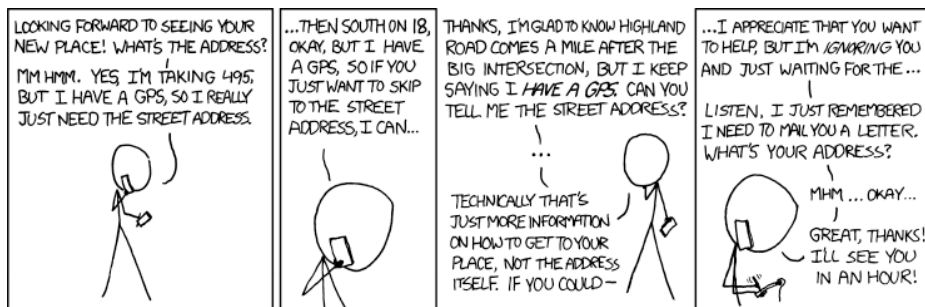
dolls (which a true voodoo shop wouldn't dabble in, despite the name), or kachina (of certain native american traditions). The pair seem to have been equally ignorant about all such things, however, so could have been avoided or invoked almost any puppet-related practices.

Megan and Rob seem to be unknowingly, and stupidly, angering every supernatural being and force in their entire town, thus setting themselves up for at least a dozen potential horror plots at the same time.

A common complaint about many horror stories is that the protagonists are flat out stupid in order to make the plot and horror work. This comic deliberately targets and makes fun of this, mocking the obliviousness that many stock horror characters show as to getting themselves into trouble with supernatural forces.

#783: I Don't Want Directions

August 23, 2010



Yes, I understand that the turn is half a mile past the big field, but my **GPS** knows that, too. This would be easier if you weren't about to ask me to repeat it all back to you.

Explanation

Cueball wants to use his GPS device to find an individual's house, and therefore needs the house's address. The person on the phone is giving him directions, something that is useless because by giving Cueball the address, the GPS can give directions to the address, possibly better than the ones he is getting over the phone. Cueball then decides to tell the person that he would like to mail something to their house, hoping they will give him the address, because you must have the address to mail something.[citation needed]

The title text is a continuation of the comic's joke. By the end of the comic, Cueball has got the information he needs, and has just ignored the directions he did not want. However, if the person on the phone insists on checking Cueball has remembered the directions correctly, Cueball has to be able to learn the useless information he did not want in the first place, and has been mostly ignoring, at least well enough to repeat it once.

Judging by the roads mentioned in the comic (Highland Rd and presumably I-495 and MA-18), the person on the phone lives somewhere around southern Lakeville, Massachusetts, and Cueball is starting from the Boston area.

The superfluosness of giving directions as opposed to using a GPS is also mentioned in 1155: Kolmogorov

Directions.

#784: Falling Asleep

August 25, 2010



Sweet unintersecting dreams!

Explanation

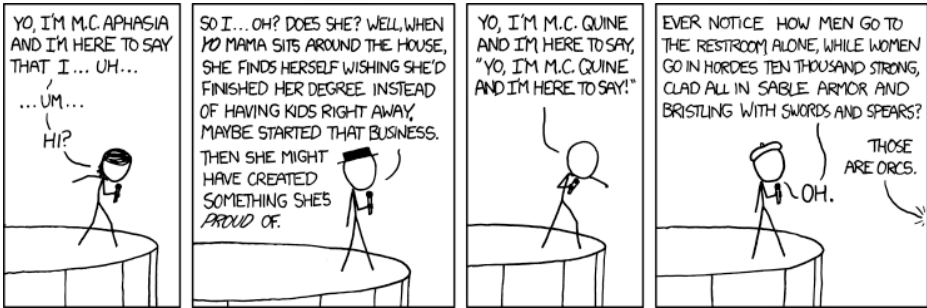
The first two panels of this strip seem romantic and sentimental, as it's common to hear that people sleep better next to people they love. Then the second to last panel starts a feeling that it might be going wrong, and then the very last panel reveals that Cueball and Megan are actually going through some relationship trouble, because Cueball uses her presence as a good reason for leaving this world behind. He does, however, not intend to commit suicide to escape from her and the world; he just wishes to escape by falling asleep (either that, or it's a double-meaning joke based on the fact that he's about to fall out of the bed).

As the title text reveals, he also wishes to avoid her in his dreams, as he wishes their dreams do not intersect - i.e. he hopes he will not dream of her (and vice versa). The opposite of "I'll see you in my dreams".

The cartoon seems to be a homage to the webcomic a softer world, which takes the same format.

#785: Open Mic Night

August 27, 2010



Ever notice how the more successful observational comics become, the more their jokes focus on flying and hotels?

Explanation

The comic depicts four acts at an open mic night, where performances typically include comedy, poetry, music and other similar performance arts.

Panel 1[edit]

Megan confidently introduces herself as M.C. Aphasia, and starts to talk to the audience. Midway through her sentence however, she appears unable to continue to talk, ending with a sheepish "Hi?". Aphasia is a language disorder, symptomized by disturbance in formulation and comprehension of language. This class of language disorder ranges from having difficulty remembering words to being completely unable to speak, read, or write. M. C. stands for Master of Ceremonies - in the context of hip-hop performance, it means a rapper. Because a rapper's delivery depends on the ability to deliver lyrics fluently at high speed, aphasia would render an MC unable to perform.

Panel 2[edit]

The second panel shows Black Hat on the stage, just after a heckler in the audience fired a 'Yo Mama' joke at Black Hat (probably "when yo mama sits around the house, she sits around the house"). A heckler's aim is usually to put the performer off of their routine, and appear funny themselves. Responses from the performer vary from simply ignoring the heckler to replying with a witty put down to get the audience back on the comedian's side and dissuade the heckler from continuing. Rather than a short witty over-the-top reply in the typical style of Yo Mama jokes, Black Hat's response is a dark, detailed, realistic insult, implying

that the heckler's mother is a failure and isn't proud of the heckler.

Panel 3[edit]

The third panel is a reference to the Quine paradox, whereby a sentence repeated twice in succession proves to be paradoxical. For example:

The sentence is another way of saying "this statement is false" but without the explicit self-reference. Named after the paradox, a quine is also a computer program which outputs its own source code.

The first sentence uses the word "say" in the normal way, as a transitive verb, with the second sentence in quotation marks as its object. The second sentence has the same words as the first, but now the word "say" is used as an intransitive verb: a non-standard usage approximately meaning "speak impressively".

Panel 4[edit]

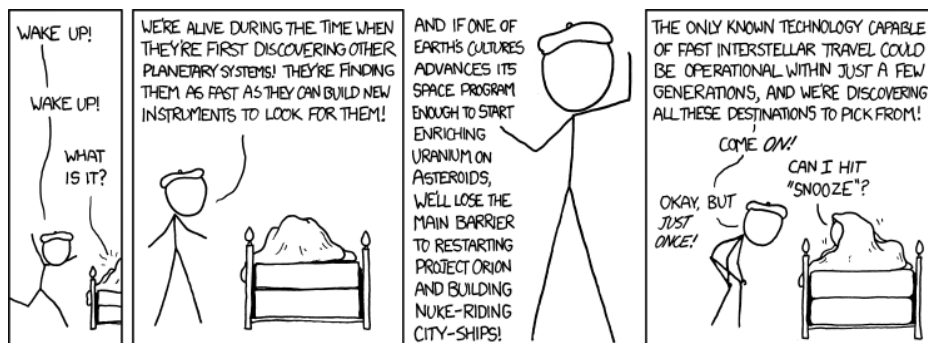
In the fourth panel, Beret Guy's speech begins as if with the common observation, "Ever notice how men go to the restroom alone, while women go in groups", but somehow gets derailed through the use of the word hordes instead of groups, and a confusion between women and orcs. When an audience member (or heckler) points this out, Beret Guy's response shows that his observations weren't intended as comedy in the first place.

The description of orc armies is reminiscent of their appearance in the movie adaptations of *The Lord of the Rings*, but in archaic wording. (For example, the phrase "clad all in sable armor" also appears in Howard Pyle's *The Story of King Arthur and His Knights* (1903).)

The title text continues the riff on different kinds of stand-up comedians, commonly referred to as comics. Observational humor is a joke that presents a typical real-life situation humorously, often with a touch of exaggeration. The title text is likely referring to stand-up comedians, like Jerry Seinfeld, who use observational humor. When an observational comic becomes more successful, they will probably "go on tour" resulting in a great deal of travel. This gives them lots of experience with airplanes and hotels, and more jokes about them will show up in the routine. Furthermore, the title text is itself an observational joke.

#786: Exoplanets

August 30, 2010



I'm just worried that we'll all leave and you won't get to come along!

Explanation

Beret Guy runs to wake up Cueball, who is probably under the covers in bed, with his potentially middle of the night revelation that Humankind is discovering "exoplanets" or planets that exist outside of our solar system. The indication is that these planets are habitable enough for humans, even if just for a visit.

Then Beret Guy takes it a bit further thinking that one of the countries on Earth could restart Project Orion (which is later mentioned in 2423: Project Orion). As Beret suggests, Project Orion was an early project to produce a spacecraft that would ride the shockwave from a series of nuclear bombs it dropped in order to travel very, very fast. However, the one major downside of Project Orion was the fallout that the launching of any such craft would present on Earth. One could try to boost the Orion spacecraft into orbit with conventional rockets, but Orion spacecraft are heavy — being composed of giant pusher plates and rows upon rows of nuclear bombs, they are hard to lift. On top of this, the Nuclear Test Ban Treaty means that the craft would be flatly illegal to build and launch on Earth, no matter what you did. However, if an asteroid mining project were to be started, the Orion drive spacecraft, the nuclear bombs, and all the infrastructure needed to man, build, and crew it could all be built safely in space, well away from the Earth's fragile biosphere, where little harm could be done. Some commercial spaceflight programs are interested in starting asteroid mining in the future, or

even now: For example, see:
<https://www.planetaryresources.com>.

In summary, Beret is very excited that we can see (with the Hubble telescope and other earth-bound telescopes) and find exoplanets. Then with some advances in space technology we can create nuclear propulsion in space to reach these planets, and it will all be happening quite possibly within a few decades. He is thus worried that Cueball will miss all of this ongoing excitement.

Cueball would just rather snooze, as he is not impressed. Beret Guy gives him only one snooze because as is apparent in the title text he is afraid that Cueball will be left behind if he snoozes too long! Giving the fact that he just stated that it may take hundreds of years this is of course silly but fits well with Beret Guy's behavior.

Exoplanets have been discovered starting in 1996, but there are still only a few confirmed planet candidates in the habitable zone at a distant star. This did change fast after that time since new ways of finding planets are created — see 1071: Exoplanets, which was posted with the same title. At that point, there were exactly 786 Exoplanets confirmed — the number of this comic - probably not a coincidence when it comes to Randall.

Part of the humor of this particular strip is that Beret Guy seems to have a sense of urgency and immediacy about something that is actually occurring at a snail's pace over decades, where Cueball finishing sleeping, or hitting snooze twice, couldn't possibly make one

crystalline erg of difference.

1624: 2016 is similar to this comic in that in each case, one character wakes up another character in order to inform that character about an event that is neither immediately relevant to that character nor short/urgent enough that that character could miss it if he slept until the morning.

#787: Orbiter

September 01, 2010



Normally, the Shuttle can't quite safely reach the orbital inclination required to pass over both those points from a Canaveral launch, but this is an alternate history in which either it launches from Vandenberg or everyone hates the Outer Banks.

Explanation

This comic is about disputed territories and low Earth orbits.

In the early days of manned spaceflight and also the Space Shuttle the communication to the mission control center in Houston required many ground stations all around the Earth. Each station could provide a link for only a few minutes and there were still gaps between them. After 1989/90, when the geostationary TDRS system became fully operational, these ground stations became obsolete.

In this comic Cueball, the main controller at mission control, is planning the next check-in with the Space Shuttle (also called orbiter), which is set to occur at 32.0N 35.5E, approx 20 miles north-east of Jerusalem, over the hotly contested Israeli-Palestinian territories. Two off-screen characters start to dispute the ownership of this geographical location and, rather than becoming involved in an argument, Cueball decides to change the check-in location to 35.2N 96.6W, approximately 50 miles east of Oklahoma City, Oklahoma, which he considers to be a neutral, non-disputed location. Unfortunately, another off-screen character, Frank, is being a dick, and he then starts to make the claim that part of Oklahoma in fact should belong to Texas.

In the title text Randall incorrectly states that the orbiter would require a different orbit to reach both Jerusalem

and Oklahoma, which cannot be achieved from a launch at Cape Canaveral. Thus, Randall proposes that the comic exists in an alternate history in which the Space Shuttles launch from Vandenberg. This is a reference to the plans to launch shuttles from there before the Challenger accident occurred. After Challenger was lost, the Vandenberg missions were scrapped and Cape Canaveral became the sole launch site for the Space Shuttle. Another possibility in this alternate history is that the rules forbidding orbital launches from Cape Canaveral to a northern direction don't exist, because nobody likes the Outer Banks (which would be in the flight path) and thus don't care about space debris falling on them.

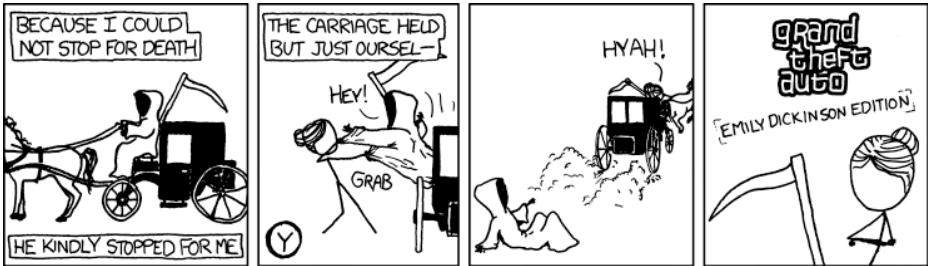
Randall's incorrectness was discussed in many forums and probably based on the wrong assumption that the inclination cannot be higher than the latitude of the launch site (28° at Cape Canaveral). But this is only the optimal inclination, actually all shuttle launches to the Mir station and the International Space Station did reach an inclination of 51.6° , with the cost of some payload mass. And following the ISS at Heavens above when it moves over Israel to the south it will pass over Texas approximately an hour later. Nevertheless this orbit is not possible at the first orbit after a launch in Cape Canaveral.

The title text doesn't mention the region south of Iceland from the beginning of the comic. This is roughly at 64° North or less (if more south) and the distance from the highest possible orbital inclination of 57° from the Cape

is 780 km. But even 1,000 km south of Iceland is only the Atlantic Ocean and the nearest landmass is still Iceland, which could explain this vague location.

#788: The Carriage

September 03, 2010



I learned from Achewood that since this poem is in ballad meter, it can be sung to the tune of Gilligan's Island. Since then, try as I might, I haven't **ONCE** been able to read it normally.

Explanation

Emily Dickinson is a famous American poet, who wrote a poem called "Death", about the personification of Death kindly stopping for her to pick her up.

Grand Theft Auto is a well known video game series where players commonly steal cars by grabbing the driver and throwing them out of the vehicle. In the lower left corner of the second panel, there is a picture of the Y-button used to enter (and steal) vehicles in the Xbox versions of the game.

The proposed Emily Dickinson edition of Grand Theft Auto mashes up these two concepts. When Death stops to pick up the protagonist (Hairbun, possibly representing Dickinson herself), she violently carriage-jacks him and takes over his carriage to use for her own purposes.

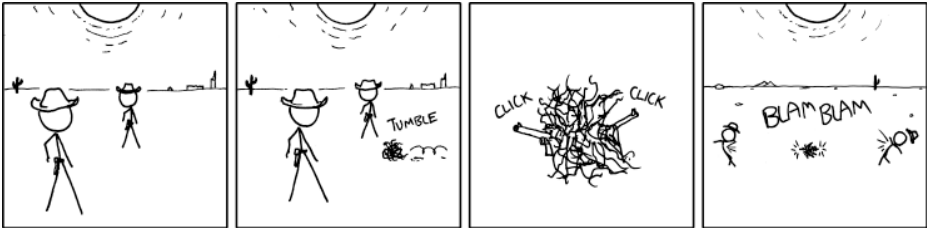
The title text refers to this strip from the webcomic Achewood where it is pointed out that poems written in ballad metre can be sung to the same tune as the theme song of Gilligan's Island, a 1960s sitcom. Upon learning this it can (as it seemingly has for Randall) become difficult to read Dickinson's poem without singing it.

The Western-themed Red Dead Redemption by the same publisher as Grand Theft Auto uses the same gameplay mechanic for stealing horses and horse carriages, but Grand Theft Auto was a more established

franchise at the time of the comic's release.

#789: Showdown

September 06, 2010



The tumbleweed then tried to roll off into the sunset, but due to the Old West's placement north of the subtropical ridge, the prevailing winds were in the wrong direction.

Explanation

Shootouts were common in many old Western films, most famously in spaghetti Westerns. Commonly, to accentuate the silence and dreariness of the scene before the fight, a tumbleweed would roll past the fighters. In this comic, the two gunmen, as per the cliché, stand quietly. The tumbleweed then rolls past, and pulls a pair of revolvers. It then shoots both of the gunfighters simultaneously, winning the duel. This is somewhat unusual, as tumbleweeds don't appear to be able to use revolvers.[citation needed]

The title text refers to a common trope in Westerns to have the hero (or in this case, the tumbleweed) ride (roll) into the sunset at the conclusion of the film. Since the sun rises in the east and set in the west, the tumbleweed would have to roll westward. However, given that prevailing winds go from west to east, that means that the tumbleweed would be unable to tumble into the sunset and be prevented from fulfilling this trope.

#790: Control

September 08, 2010

MY HOBBY:



SNEAKING INTO EXPERIMENTS AND
GIVING LSD TO THE CONTROL GROUP

Which, at one point, led to a study showing that LSD produces no more hallucinations than a placebo.

Explanation

This is another comic in the My Hobby series. In a product experiment, two groups of people are given a certain pill or lotion. Some people are given the product to be tested, while others (the control group) are given a placebo; nobody is told which group they belong to. The control group acts as a norm for comparison against the others.

Randall has messed with this process by giving LSD (lysergic acid diethylamide) to the control group. LSD is a drug that causes hallucinations and distortions in the perception of time and space. Megan, apparently a control, is experiencing spiders in her hallucinations. Since the control group is supposed to reflect what "normally" happens, this is indeed very confusing to the scientists. While hallucinating in the comic Megan is drawn as if she has six arms indicating that she's waving her arms. Though this also makes her look (together with her lower limbs) as if she has eight 'legs', in the manner of an actual spider.

The scientists are confused. This may mean that, in the light of the unusual adverse events, they have executed the option of unblinding the study. This implies that the trial has (or is being) ended, as not being double-blinded itself impacts the veracity of a continuing study. In a properly double-blinded study, the scientists would not know Cueball or Megan was the control and would only dutifully record their observations. However, it may be

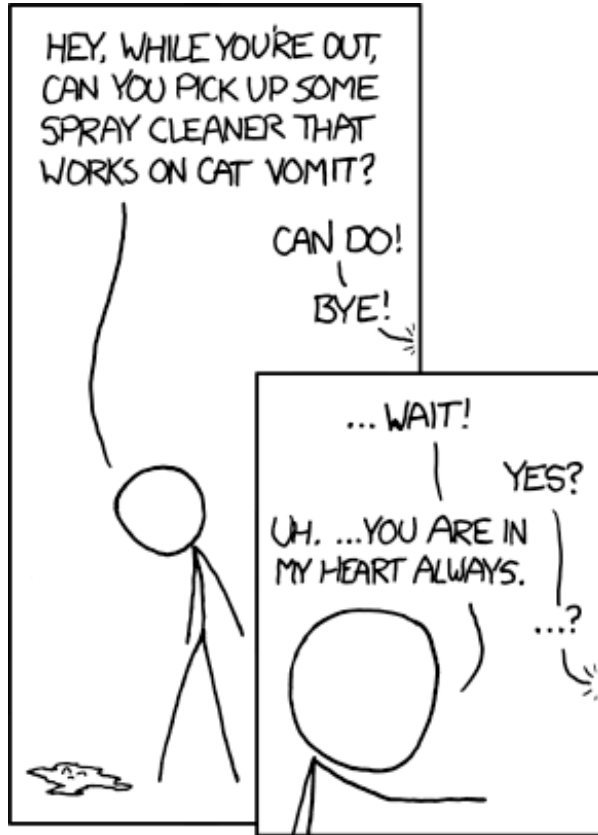
equally confusing even if they don't yet know which cohorts either participant are members of (for all they know, these two are from the same one), as the treatment may or may not be creating hallucinations even as the non-treatment may or may not seem to clear up rashes.

Depending upon how the flailing-limbed individual is interpreted, one or other 'treatment' may even have actually promoted the growth of additional body parts. Logically, this is more likely to arise from a trial drug intended to affect surface tissues (though still far from the usual expectations of any "anti-rash treatment") than a commonly used hallucinogen whose effects are generally understood to be on brain-chemistry and nervous function. Either outcome should worry any observer, even those not under the misconception that a placebo (also an unlikely cause, by definition) might be the provocative agent in this instance.

The title text suggests that, in a different study, this substitution was performed when the product being tested was itself LSD. This led to the conclusion that LSD is no more likely to cause hallucinations than the 'placebo', implying that LSD is not a significant hallucinogen. We can only hope they were able to redo the test, as in layman's terms "Nonsense MUST be wrong". Randall could also have only sneaked placebo in as the 'LSD' element of the study, to get the same comparative effect, though (if checked) the difference between the whole cohorts, from each modified type of study, would be striking.

#791: Leaving

September 10, 2010



SOMETIMES, WHEN PEOPLE LEAVE, I'M
SEIZED BY A SUDDEN FEAR THAT THEY'LL
DIE WHILE THEY'RE OUT, AND I'LL NEVER
FORGET THE LAST THING I SAID TO THEM.

What'll I say -- "I was staring at some cat vomit when I got the news?"

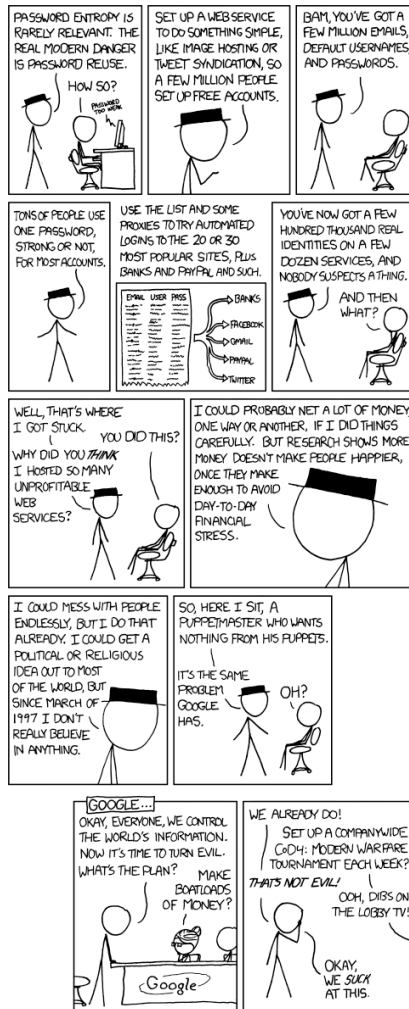
Explanation

The caption below the frame tells us that Cueball is afraid that if someone were to die unexpectedly, then he is afraid that he will not be able to forget the last thing he said to that person. In the comic panel, Cueball has observed a mess on the floor, presumably cat vomit. He asks the second, off panel, character who is leaving to "pick up some spray cleaner that works on cat vomit." Cueball suddenly realizes that should the off-panel character die on that errand that this would be the last thing he said to them. Panicking slightly, Cueball interrupts their departure and says something more appropriate as last words - "You are in my heart always." The off-panel character is confused by this statement, not being aware of Cueball's fear.

In the title text, Cueball is realizing that if he hadn't have made this last-minute addition, and this person dies, his last memory of them might instead be that he was staring at cat vomit when he heard. This thought might in fact be the thought that prompted him to make his parting comment.

#792: Password Reuse

September 13, 2010



It'll be hilarious the first few times this happens.

Explanation

This comic has three layers: hacking, philosophy, and Google satire.

It starts off on a practical level, with Black Hat describing to Cueball a devious social engineering scheme. It relies on the fact that people commonly reuse the same password on multiple websites, and tend to create accounts on new websites somewhat indiscriminately. Thus, one could create a simple Web service to collect users' usernames, email addresses, and passwords. Since many users will reuse this combination on other websites as well, the website owner can try to hack their accounts on other common sites, such as Amazon, PayPal or even people's banks, using the same login information.

In panel 7, the comic suddenly develops a philosophical and ethical bent. Black Hat reveals that he has already carried out step 1, through his numerous unprofitable Web services which he had been running for this very purpose. However, after successfully executing the hack, he realizes that he does not know what to do with all this power.

He reveals that he is already financially self-sufficient, and makes a point that money can't buy happiness once past that point, stating that research has proven this. He could use his power to realize his sadistic pleasures of messing with people, but he's already a serial classhole and does not need this information to continue that

trend.

If he had any beliefs or ideology, he could use this power to try to spread them. However, he reveals that "since March of 1997" he doesn't really believe in anything. While he doesn't reveal specifically what in March of 1997 caused this, it could possibly refer to the March 26, 1997 incident in San Diego, California, where 39 Heaven's Gate cultists committed mass suicide at their compound. One of the cultists was the brother of Nichelle Nichols (a Star Trek actress), so the event got a big resonance in nerd circles (and Randall often references Star Trek in xkcd). However, given Black Hat's strange behavior, it could be anything, from Bill Clinton banning federal funding for human cloning research on the fourth, to the launch of Teletubbies on the thirty first. Later, in 1717: Pyramid Honey, Black Hat seems to finally find something to believe in.

The dilemma: Black Hat has cleverly executed a hack that has given him a lot of power, but he doesn't know what to do with it.

The last part of the comic now transitions to a satire on how Google has already gone through both the stages described above. It describes how all of Google's free services are simply a ploy to collect and control all the world's information, similar in concept but grander than the hack described in part 1. It satirizes the notion that behind Google's "Don't be evil" motto is actually an end-goal of using their powers eventually for evil. (Google has since removed the motto from their code of

conduct, so maybe Randall's on to something...)

However, just like Black Hat, once Google reaches the stage where they are able to capitalize on their powers, the Cueball-like head-executive finds that there is nothing evil left for them to desire, except (as Hairbun states) make even more money. As they already make a lot of money this ploy is moot, and anything remaining that they wish to do, such as hosting Call of Duty (CoD) tournaments, isn't evil at all.

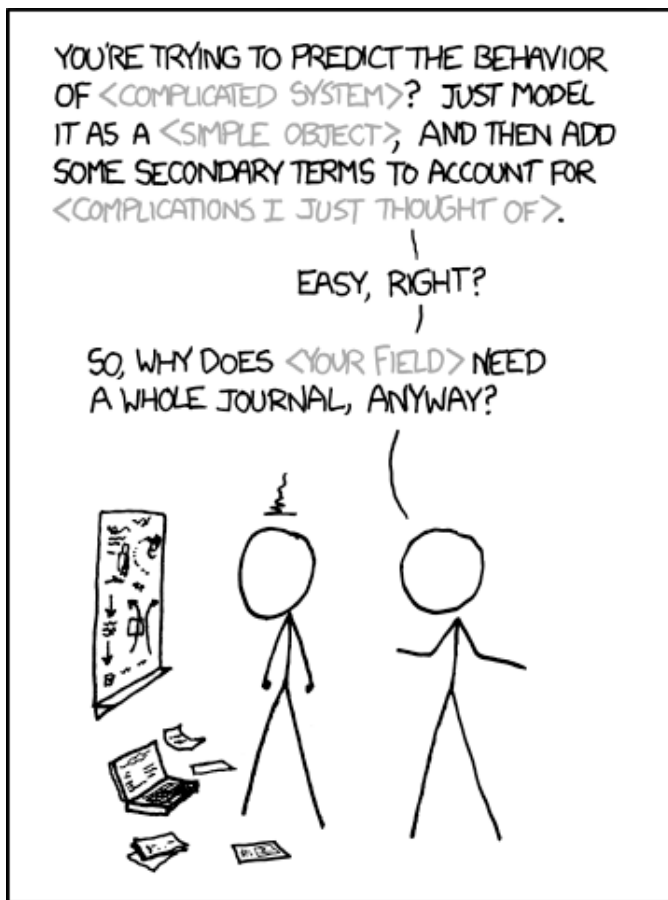
In the end, the secretary calls dibs on the TV in the lobby in order to play CoD4 on what (one can assume) is a large screen. The Cueball-like executive who wished to implement the evil plan in the first place facepalms when he realizes that Google just sucks at being evil.

In the title text, "The first few times this happens" may refer to the weekly CoD4 "tournament." Alternatively, it could also mean the "first few times" a company decides to turn evil (but then has no idea how). It could also refer to the first couple of times an individual follows through on this plan but fails after the first part due to a lack of planning for the second part.

This comic was directly referenced in the title text of 1286: Encryptic.

#793: Physicists

September 15, 2010



LIBERAL-ARTS MAJORS MAY BE ANNOYING SOMETIMES, BUT THERE'S *NOTHING* MORE OBNOXIOUS THAN A PHYSICIST FIRST ENCOUNTERING A NEW SUBJECT.

If you need some help with the math, let me know, but that should be enough to get you started! Huh? No, I don't need to read your thesis, I can imagine roughly what it says.

Explanation

This comic shows a view that many physics students, upon first encountering a well-known problem, think that it is not a difficult problem, since they think they can fix it using an extremely simplified model. The obvious problem with this is that if it was that simple to solve the problem to a useful degree, there wouldn't be an entire department studying the problem. This attitude leads to great annoyance from those who have probably spent years and years working on the problem, hence the Cueball with balled up fists, implying that he wants to punch the physics major.

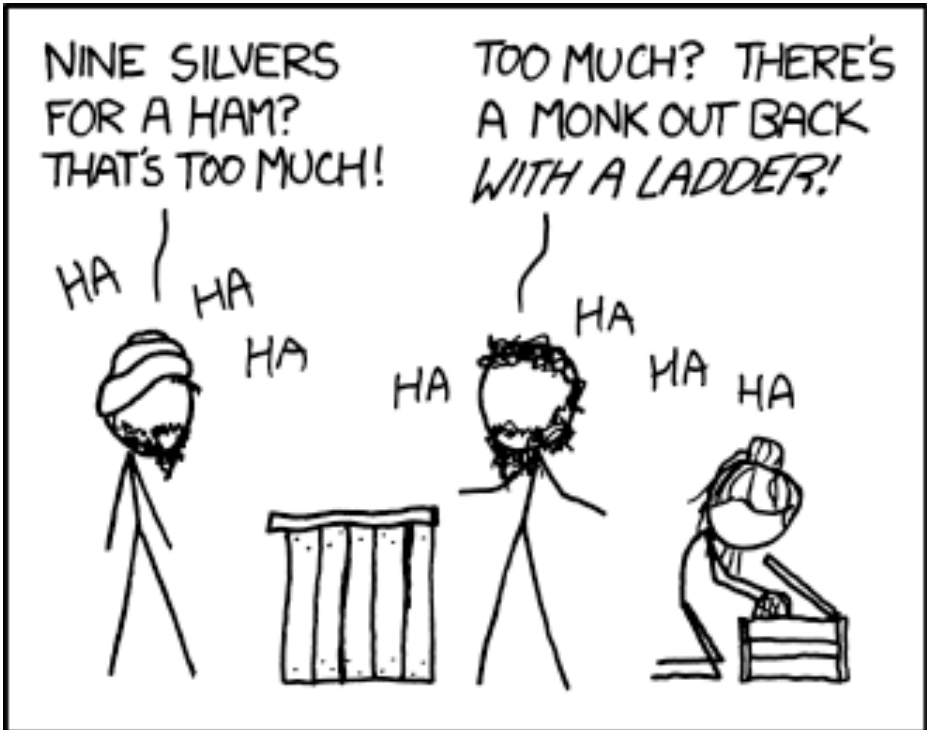
This argument is similar to the spherical cow, an idea that basic models taught in early physics classes only work in frictionless vacuums, as shown in 669: Experiment.

The title text takes the dismissive attitude to its logical extreme. The comment "liberal-arts majors can be annoying sometimes" seems to be referencing the stereotype that they're all elitist know-it-alls.

Cueball later behaves similarly in 1831: Here to Help.

#794: Inside Joke

September 17, 2010



THERE'S NO REASON TO THINK THAT PEOPLE THROUGHOUT HISTORY DIDN'T HAVE JUST AS MANY INSIDE JOKES AND CATCHPHRASES AS ANY MODERN GROUP OF HIGH-SCHOOLERS.

I've looked through a few annotated versions of classic books, and it's shocking how much of what's in there is basically pop-culture references totally lost on us now.

Explanation

Inside jokes occur between friends and family members that live through a shared experience, which makes them laugh when they make reference to it later on. For people not "in the know", these inside jokes can come across as being completely incomprehensible, and in extreme cases just sound like random words strung together.

Randall posits the hypothesis that this has been going on throughout history and that historical figures probably had the same number of inside jokes as any modern group of high-school students. He probably chose to compare them to high-school students because that is a time of complex social interactions and cliques, which are conducive to the formation of inside jokes.

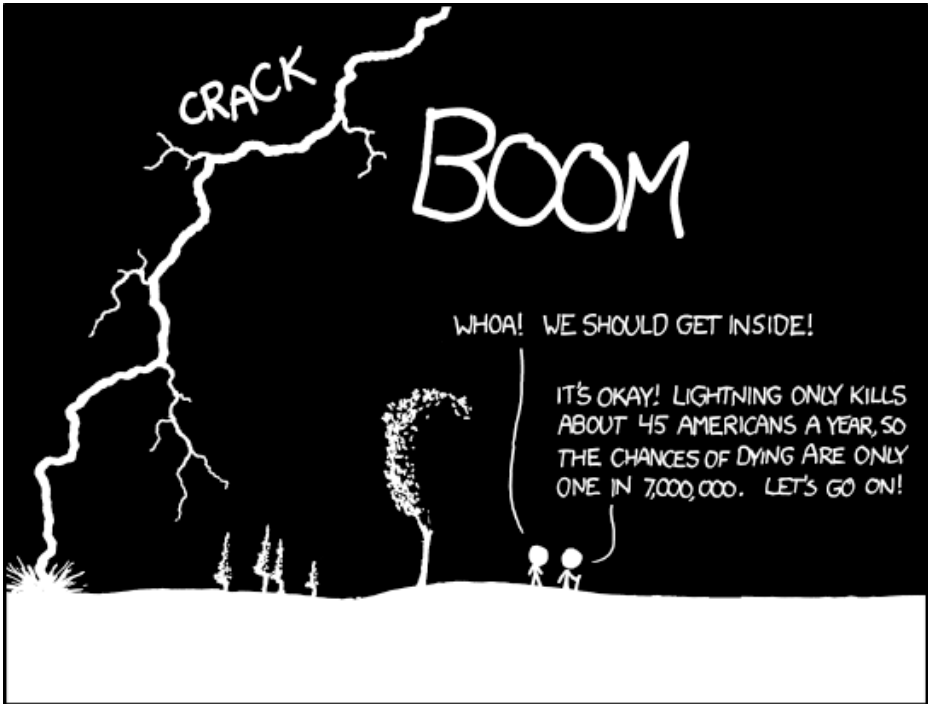
The title text says that there are several classic books that make pop-culture references to events that no modern reader was alive to see. Topicality sometimes has the unfortunate side-effect of the work being far less understood to later generations. Suggested examples so far include Homer's *Odyssey*, Shakespeare's *Much Ado About Nothing*, and Lewis Carroll's *Alice* books, whose many nineteenth-century cultural references are enumerated in *The Annotated Alice*.

The inside joke presented in the comic appears to be a reference to the esoterically-named *Buddha Jumps Over the Wall*, a type of fish soup that allegedly smelled so delicious, Buddhist disciples would sneak out of their

meditative ceremonies to eat it. In this case, the ham seller comments that his products are so delicious that even the monk nearby is climbing over the wall to get some ham after the buyer remarked that his product was too expensive.

#795: Conditional Risk

September 20, 2010



THE ANNUAL DEATH RATE AMONG PEOPLE
WHO KNOW THAT STATISTIC IS ONE IN SIX.

'Dude, wait -- I'm not American! So my risk is basically zero!'

Explanation

The comic deals with the difference between the general probability of a certain event based on history and the probability of the same event in particular circumstances. The chance of any American selected randomly from the general population to be killed by lightning is very low, but part of the reason for this is that an average American would seek shelter and safety when caught in a lightning storm. The joke is that someone armed with this particular statistical knowledge would not take the normal precautions and therefore leave themselves far more vulnerable.

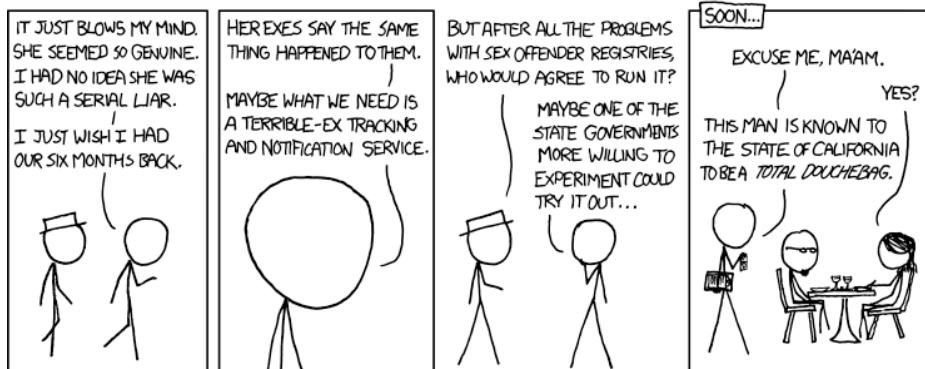
In the title text, since the statistic provided talks only about Americans, the other character wrongly assumes that lightning strikes only happen to Americans, rather than the data for lightning strikes for other nationalities being simply not included in the discussion. Because of this, as a non-American, he believes his chance of being struck by lightning is nonexistent - which underlines the difference between knowing a certain event can't or didn't happen and not having any data about the event.

The "one in six" statistic is probably invented by the author - which also illuminates the danger of dealing with "statistical data" provided by random sources without any attribution to actual statistical surveys or hard data. And of course, now a lot of xkcd readers know the statistic, likely bringing down the death rate.

A similar situation is referred to in the what if? on hailstones .

#796: Bad Ex

September 22, 2010



Since the goatee, glasses, and Seltzer & Friedberg DVD collection didn't tip you off, there will be a **\$20** negligence charge for this service.

Explanation

Cueball has been betrayed by his girlfriend, and later found out that he's not the first one she betrayed. He thinks that society should provide a service that collects reports about such notorious liars, warning future dates about their true nature.

Cueball's friend, White Hat, is concerned about the accuracy of the information, comparing this proposed service to sex offender registries, presumably suggesting that people would not want to operate such a database because of the risk of civil liability for defamation from inaccurate information, or simply that innocent people would be harmed if it was inaccurate. Cueball responds by suggesting that, if such a database could not be operated as a profitable business, a state's government might be willing to operate it because of the benefits to society.

In the last panel, we see such a notification being given to a woman at a date. One interpretation of this comic could be that the bearded man is not, in fact, a douchebag, but Cueball is calling him one because he is attracted to her, and thus wants to separate them.

The "State of California" wording is a reference to California Proposition 65 which requires specific products to have labels reading "This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm."

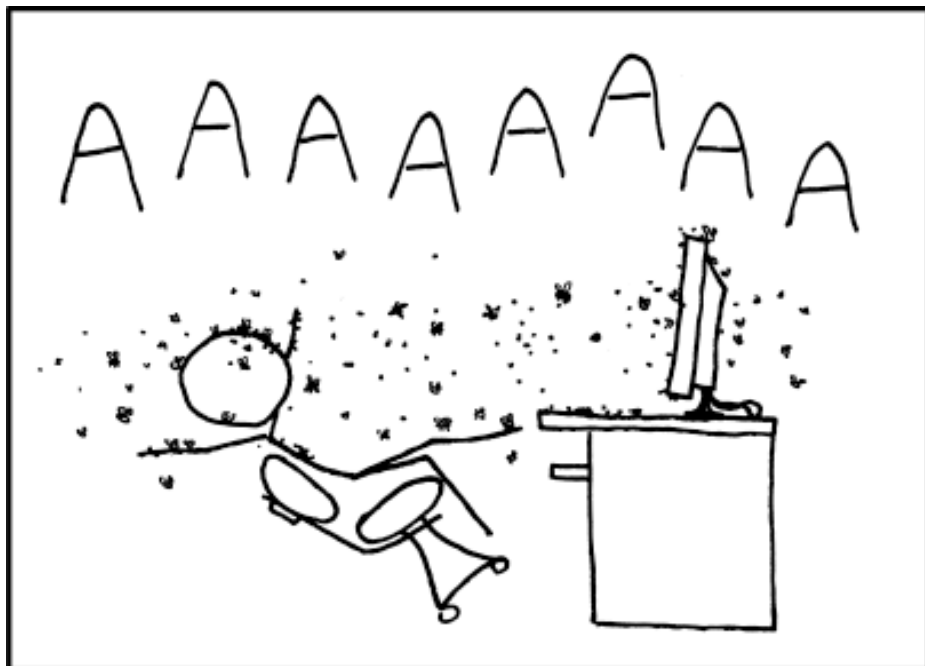
California is also known for being a state with a government unusually willing to try out new policy ideas.

The title text lists a few "douchebag" warning signals that the woman should have observed.

Jason Friedberg and Aaron Seltzer were known for making shallow parody movies which were notoriously negatively received; some of their movies, including Epic Movie and Disaster Movie, are considered to be among the worst movies ever made. That the woman can be charged \$20 without her prior consent indicates that this is in fact a government service, as this could be done through the power to tax.

#797: debian-main

September 24, 2010



MY PACKAGE MADE IT INTO DEBIAN-MAIN BECAUSE
IT LOOKED INNOCUOUS ENOUGH; NO ONE NOTICED
"LOCUSTS" IN THE DEPENDENCY LIST.

dpkg: error processing package (--purge): subprocess
pre-removal script returned error exit 163:
OH_GOD_THEYRE_INSIDE_MY_CLOTHES

Explanation

Debian is a GNU/Linux distribution most notable for introducing APT (Advanced Packaging Tool). APT is a tool that functions as an automated general software installer for GNU/Linux systems; all one has to do is tell it what software package they would like to install, and the program will automatically fetch the software and all of its dependencies (other packages that a program relies on, such as a library for processing ZIP archives) from a central repository. It will also automatically handle upgrades by automatically checking if the repository version of a package is higher than the currently installed version, and it can even handle the use of multiple repositories and linking between them; for example, if a piece of software is deemed worthy of inclusion in Debian's main repository, but as a stable release, the software developers can provide their own repository to provide a more experimental version for users who want it, and once that repository is added to APT's source list, APT will automatically realize that it should use the experimental version, since it has a higher version than that of the main repository. Although this wasn't the first package management system for easy GNU/Linux installation (that honor goes to RPM), it is the first one that seamlessly integrated online installation and upgrades into the mix.

Debian's main repository, `debian-main`, is included by default in all Debian installations. It's what you might call the "canon" of Debian, containing only those

packages that have been approved by official Debian developers. Thus, getting a package on `debian-main` means that it, theoretically, conforms to a standard of quality.

In this case, however, the Debian developers seem to have not noticed that one of the dependencies for the package is "locusts." Locusts are real insects, the migratory forms of several grasshopper species, that are best known for breeding extremely quickly, swarming, and devouring all green plant matter they come across, resulting in crop devastation (some consider this a plague). In some parts of the world they are also considered a delicacy. Cueball probably does not appreciate this as they crawl over his body searching for food, apparently spontaneously generated by APT as it saw that it needed "locusts" to install the package.

The title text is an error line from `dpkg`, the program used to install/remove APT packages. Every package contains several scripts (although some of them may be empty) that are run on various events related to that package; these are used to perform any setup/cleanup tasks the package needs. This line is an error line indicating that one of those scripts has failed. The relevant portions are:

- `error processing package (--purge): --purge` is the option to purge a package completely from the system. This means that the program itself, all related data files, and all configuration files are removed from the system. So, the user was attempting to completely remove the

locusts from the system without leaving a trace.

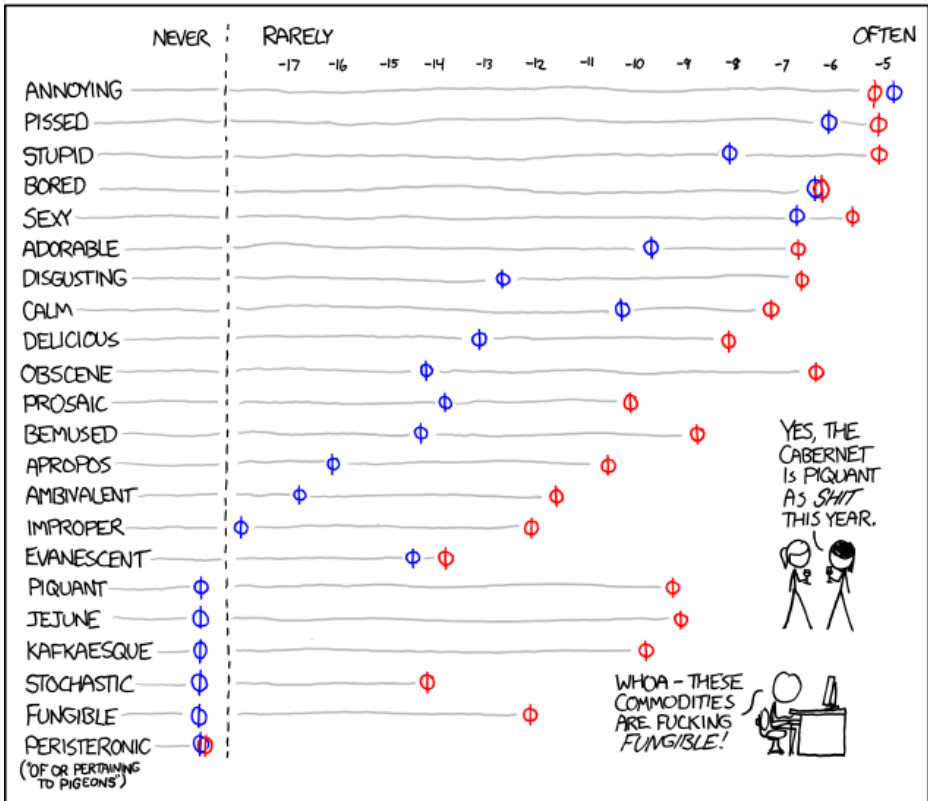
- subprocess pre-removal script: The pre-removal script is the code run before actually removing a piece of software. Mostly, this allows long-running software (such as web servers) to stop themselves before removing anything, to avoid corrupting the hard disk. That means the error came while the computer was preparing to get rid of the locusts.
- returned error exit 163: "Returned error" means just what it says, the script returned an error. "Exit" means that the error was a result of calling the `exit()` function with a non-zero value, specifically the value 163. The exact value has no real significance other than signifying to a user or other application that understands what the code means; neither `dpkg` nor the Linux kernel itself treat any exit value specially, apart from checking whether the value is 0 (which means no error).
- `OH_GOD_THEYRE_INSIDE_MY_CLOTHES`: This is the message returned along with the error. This seems to be a message from the programmer, somewhat like the apocryphal "Help! I'm trapped in ... factory" urban myth. The programmer has failed to write a functioning pre-removal script, due to locusts and is calling for help via an error message.

#798: Adjectives

September 27, 2010

FREQUENCY WITH WHICH VARIOUS ADJECTIVES
ARE INTENSIFIED WITH OBSCENITIES (BASED ON GOOGLE HITS)

Φ: "FUCKING ____"
Φ: "____ AS SHIT" SCALE: $\text{LN} \left(\frac{\text{HITS FOR INTENSIFIED PHRASE}}{\text{HITS FOR ADJECTIVE ALONE}} \right)$



'Fucking ineffable' sounds like someone remembering how to do self-censorship halfway through a phrase.

Explanation

This comic is a plot graph comparing how often certain adjectives are used alone versus in the phrases "fucking [adjective]" and "[adjective] as shit". Plot data is based on Google search engine result count, or hits. The graph's formula uses the natural logarithm of the hits for the obscene phrase divided by the hits for the adjective alone.

It's a social observation of linguistics pointing out that the use of swear words as intensifiers is more common with everyday words (eg. annoying, pissed, stupid) than it is with more arcane words (eg. piquant, fungible). Two words are used as examples in a sentence shown to the right. These sentences are not something you would be likely to overhear. In the case of fucking fungible it is also a way to justify its relatively high occurrence online. Of course given the log scale, it is still very rarely used like this.

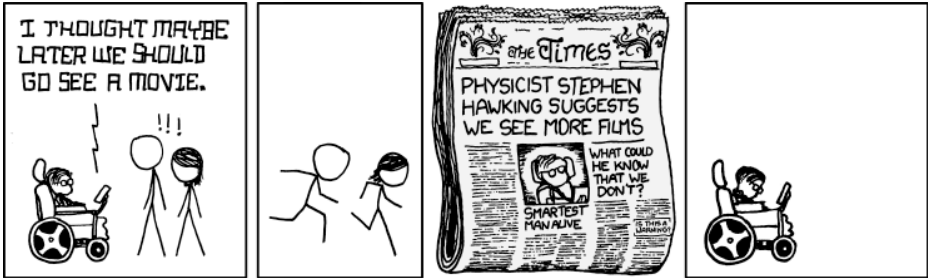
The only word included in the graph that's never found in either obscene phrase is peristeronic. Its definition ("Of or pertaining to pigeons") is included due to its extreme obscurity. (The words was used again later as a difficult word in the survey part of comic 1572: xkcd Survey.

The title text mocks the use of the word fucking in combination with ineffable since the colloquialism effing or F-ing is a way of censoring "the F-word", fuck. The two used together resembles someone partially

self-censoring the phrase "fucking unfuckable."

#799: Stephen Hawking

September 29, 2010



'Guys? The Town is supposed to be good, and I thou--'
'PHYSICIST STEPHEN HAWKING DECLARES NEW FILM BEST
IN ALL SPACE AND TIME' 'No, I just heard that--' 'SHOULD
SCIENCE PLAY A ROLE IN JUDGING BEN AFFLECK?' 'I don't
think--' 'WHAT ABOUT MATT DAMON?'

Explanation

Stephen Hawking (1942-2018) was a renowned theoretical physicist. He was almost completely paralyzed due to amyotrophic lateral sclerosis and communicated with a speech-generating device, as shown in the first panel. In this comic, he mentions to Cueball and Megan maybe they could go to a movie together later, but they take it as a scientific declaration that they should go see a movie and have it published in a newspaper, which portrays it in hyperbolic tones, vastly exaggerating and misinterpreting his actual intent. In the final panel, Hawking is shown hanging his head in sadness since all he wanted to do was see a movie with his friends.

This can be taken as a satire of sensationalism of science in popular media, particularly in emphasizing the viewpoints of well-known and popular personalities in science. A similar theme was used in 1206: Einstein.

The title text continues the joke, with innocuous comments by Hawking interpreted as important revelations.

The Town is a movie which was released 10 days before this comic's release. Hawking tries to suggest they go see The Town which should be good, as he may know since it both received positive reviews and was a box office hit. But instead the newspapers again sensationalize his statements and declare The Town to be the best in the universe.

When Hawking then tries to state that this was just something he had heard, the newspaper asks if science should play a role in judging Ben Affleck. Ben Affleck directed, wrote and starred (top billing) in this movie, so any judgment of this film would reflect on Affleck. The media asks if science should have an opinion on art, in this case Ben Affleck, and thus judge it. It could be argued that it should not as art is not necessarily based on anything scientific, but to thus state that a scientist must now have an opinion on art is a completely different story. Hawking is here defined as Science. If he says so then it is the opinion of the Scientific community and not just his personal opinion.

Before Hawking even gets close to finishing his next sentence, the media asks what about Matt Damon -- should he judge him as well. Ben Affleck and Matt Damon have a long history together and came to prominence together as screenwriters of *Good Will Hunting*, winning an Oscar for the script. They also co-starred in the movie, with Matt Damon in a main role opposite Robin Williams. Following that, Matt Damon's acting career has been more commercially successful than Affleck's, causing speculation that their friendship could be in trouble over such details. But they have kept working together and are co-owners of the production company Pearl Street Films, so this is probably not the case.

But still more than ten years after their shared Oscar moment for best script for *Good Will Hunting*, many people think of Damon when they hear of Affleck and

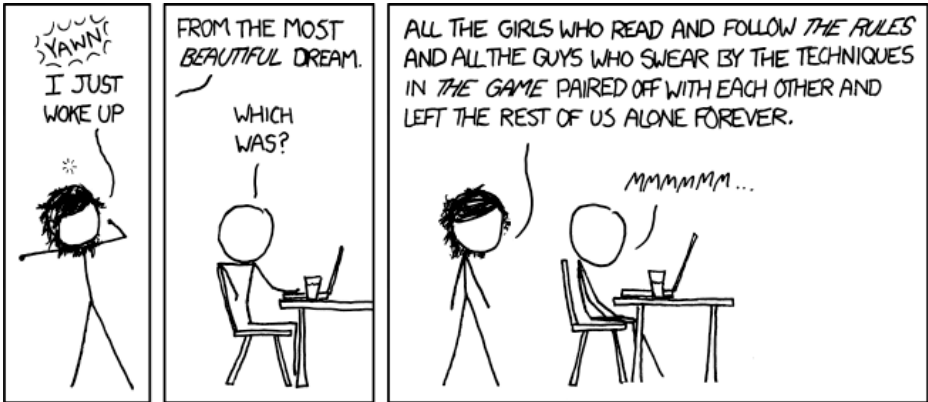
the other way around. This is the reason for the last question by the press.

Those of you feeling bad for Steven Hawking might feel good to know that he had a healthy social life in reality, and had even dabbled in a brief acting career (typically as cameo appearances).

A drawing of Stephen Hawking also appeared in 1000: 1000 Comics. If you wish to try and find him yourself first then do not read on or click the links below. If you need a bit of help to find him then this link will show you which number of 1000 he is in. Else you can find him fast as he is no. 49 in this numbered image.

#800: Beautiful Dream

October 01, 2010



Lucky. In MY dream, all the people who grew up loving *The Giving Tree* paired up with all the students who had weird dreams after reading *The Metamorphosis*. That one was more confusing.

Explanation

In this comic, Megan has just woken from a dream in which the girls who follow *The Rules* and the guys who play *The Game* have paired off and left everyone else alone.

"*The Rules*" refers to a book entitled "*The Rules: Time-tested Secrets for Capturing the Heart of Mr. Right*" which the authors describe as a self-help book for women seeking a man to marry. It's often decried for being formulaic and for reducing the women who follow it and the men they seek to outdated stereotypes about gender roles. The rules themselves amount to a complicated game of "hard to get", which is not exactly a new strategy, nor is it always the best approach to take.

"*The Game*" refers to a series of books entitled "*The Game: Penetrating the Secret Society of Pickup Artists*", which is a purported exposé on the pickup artist community (which is not similar to a pick-up basketball game, see 1178: *Pickup Artists*), and its follow-up "*Rules of the Game*", which describes the techniques used. Pickup artistry involves the use of psychological and emotional tricks intended to coerce women into casual sex. Practitioners of pickup are considered by many to be manipulative and creepy for reducing women to little more than objects for conquest.

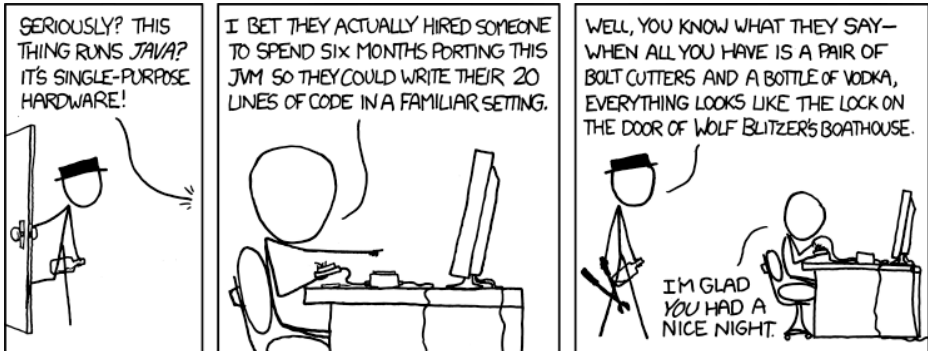
It's clear that Megan has a low opinion of those who put stock in these works. The idea of removing the *Rules*

Girls and the Game Players from social interaction by pair bonding them to each other is one that appeals to her. Cueball's response seems to indicate that he agrees with her.

The title text takes a surrealist step with Cueball's response to Megan. The Giving Tree is a children's book by Shel Silverstein about the relationship between a tree and a young boy who grows to be an old man. The Metamorphosis is a work of fiction by Franz Kafka in which a traveling salesman wakes up after having strange dreams to find that he has been turned into a nondescript giant bug. The implication could be that, in the dream, those who preferred the Giving Tree were treated as literal trees and crawled on by the ones who dreamt weirdly about the Metamorphosis acting as if they themselves were bugs - or perhaps in the logic of the dream the former became actual trees and the latter actual bugs.

#801: Golden Hammer

October 04, 2010



Took me five tries to find the right one, but I managed to salvage our night out--if not the boat--in the end.

Explanation

Java is a programming language touted for its Portability™ (the ability for software to run on many different systems; "write once, run everywhere"), which sometimes leads to it being used in systems where it really just shouldn't be used. Cueball laments that the hardware he's tinkering with, despite being used for a single purpose, has its firmware written in Java; since the microprocessor is unknown, it's quite possible the Java Virtual Machine (JVM) had to be ported over to the processor before the hardware designers could write firmware for it. Presumably, they considered this worthwhile to be able to write the control code in a language they're comfortable with, even though it probably would have been much more effective to just write the control code in whatever language they used to port the JVM in the first place, or maybe even take the effort to design an ASIC that can drive the peripheral instead.

Black Hat explains that this is really an example of an age-old adage: "When all you have is a hammer, everything looks like a nail", also referred to as the "law of the instrument" or, as in the title, the "golden hammer". The hardware developers probably only knew Java, and when they thought about how to write firmware for their new device, "Java" was the only solution that occurred to them.

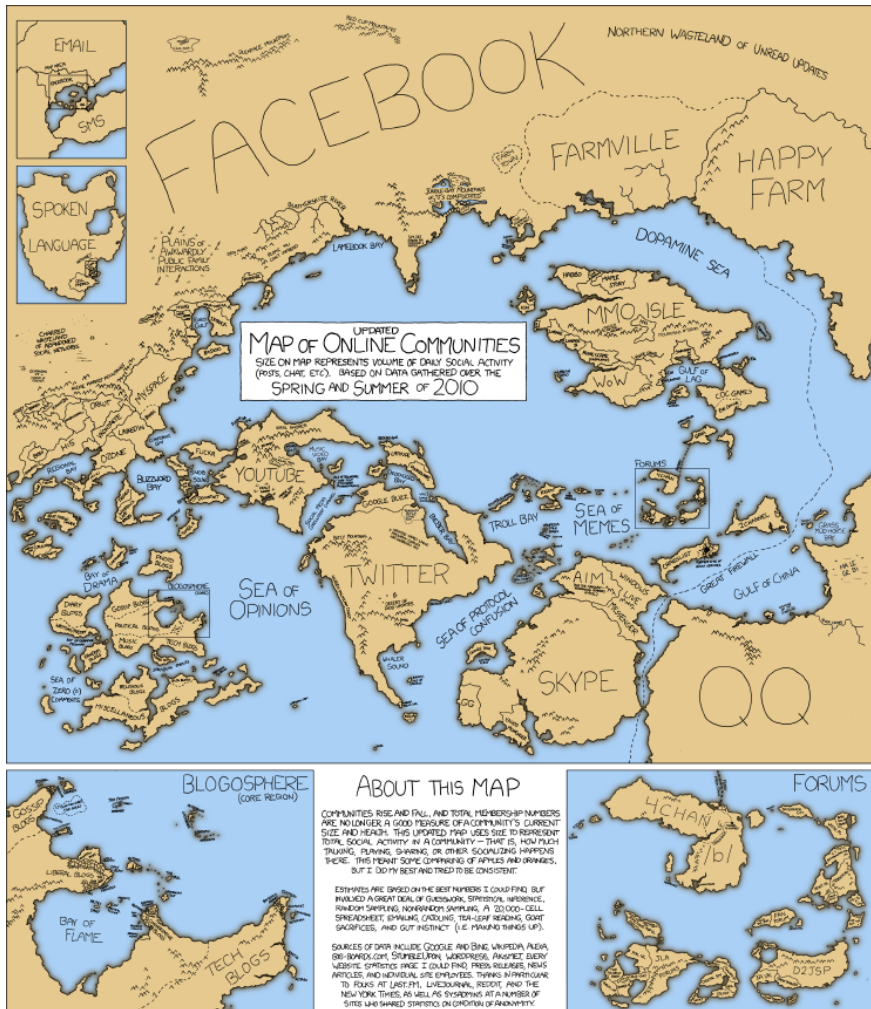
Of course, instead of a hammer and a nail, Black Hat's

analogy is about using bolt-cutters and vodka to get through the lock on CNN journalist Wolf Blitzer's boathouse. Not-so-coincidentally, Black Hat is actually holding a pair of bolt-cutters and a mostly empty vodka bottle; the implication is that Black Hat did, in fact, drunkenly break into Blitzer's boathouse the previous night, which is why he has just now entered the door at the start of the strip. The changes he makes to the adage implies that he believes vodka and boltcutters are designed specifically to be used on Blitzer's boathouse, an interpretation that fits Black Hat's warped and anarchic disposition. Most normal people would react with shock at what Black Hat has (allegedly) done, but Cueball, being either extremely jaded by the (mis)use of Java or simply desensitized to Black Hat's behaviour, can only bring himself to say that he's glad Black Hat's been having more fun than him.

The title text implies that Black Hat had to break into a number of boathouses before he found Blitzer's, and that his boat did not survive the evening. The use of the phrase 'our night' allows us to infer that Black Hat was not alone when he broke into the boathouse (Danish would probably be his most likely partner in crime).

#802: Online Communities 2

October 06, 2010



Best trivia I learned while working on this: 'Man, Farmville is so huge! Do you realize it's the second-biggest browser-based social-networking-centered farming game in the **WORLD?**' Then you wait for the listener to do a

double-take.

Explanation

This comic shows a map of internet communities where the size of each region roughly corresponds to its size, and its proximity to other regions indicates similarities.

This is the successor of 256: Online Communities. It differs in that it is updated, and furthermore, instead of using the membership of whichever service to determine its size on the map, it uses its "daily social activity."

The map actually has two super-maps intended to show the relative usage of types of communication: the online community map is surrounded by the much larger "countries" of E-Mail, SMS ("Instant Messaging") and "Cell Phones," which in turn are surrounded by the even huger "Spoken Language." It is unclear whether "Cell Phones" is intended to represent an independent region, or whether it is meant to be a sub-region of "Spoken Language." The ambiguity is exacerbated by the fact that cell phones are the primary medium of SMS, and are also used to access email and online communities. It's also unclear why other forms of communication, such as handwritten letters, are not included.

At the title text Randall explains that, using his definition of "most activity per day," Farmville is actually the second most popular social-network farming game - the Chinese game Happy Farm was more popular at the time. This strikes many English-speaking xkcd readers as odd, because Farmville is much more famous, leading one to

wonder how it could not be the most played. The phrase "browser-based social-networking-centered farming game" is an example of an overly-narrow superlative.

Facebook Region[edit]

The Facebook region deals with social networks, that is, websites oriented towards having people meet.

Facebook is a social networking site that allows people to meet old real-life friends and make new friends that share similar interests. One of its most notable features is that a member can update a "status" or make normal posts about the happenings of the member's life, complete with pictures, other members "liking" these posts. The size of the Facebook region is not exaggerated; most websites seem to allow "liking" their content or allow/require logging in the website with a Facebook account. There even are cell phones with a "Facebook" button!

- FarmVille and Farm Town are Facebook games in which users manage farms. Happy Farm, the Chinese game that inspired the other two, does not require Facebook integration, so it is separated by a solid line from Facebook. The "Unethical Bay" refers to how these games tend to addict players into constantly buying virtual items of questionable value.
- People You Can't Unfriend refers to people whom, due to real-life expectations and relationships, unfriending them is difficult, no matter how you really feel about them.
- Blatherskite River refers to the conversations on Facebook, which may be long yet devoid of general meaning or logic.
- Data Mines refer to the data mining that Facebook does with

the interests of its members. This fuels the profitable advertising business at the expense of customer trust.

- Plains of Awkwardly Public Family Interactions refer to how interactions with family members on Facebook suddenly become more awkward because everyone on Facebook (and sometimes off Facebook, given that you do not necessarily need to log in if you want to see someone's Facebook account) if you are discussing with your family through post comments.
- 524,287 Strong for Mersenne Primes refers to the communities who gain followers for a cause. A Mersenne prime is a prime number that is 1 less than a power of 2; 524287 is the 7th known Mersenne prime.
- Jungle-Bay Mountains of "It's Complicated" refers to one of Facebook's options as to what a user's relationship status currently is. A Jungle-Bay Mountain is a complicated and undefined climate, hence the complication.
- "lamebook bay" refers to the online website "lamebook", where users post photos of funny things that happen on Facebook (these can include statuses, "fails", put-downs and images.)
- "Old Facebook" Resistance refers to Facebook's earlier users, who have often resisted (and resented) changes made to Facebook as it became more popular.
- Privacy Controls is located on the map surrounded by a Lava Pool, which is a reference to how difficult it is to find the privacy controls within Facebook.
- Niche Market Mountains refers to social networks aimed towards more niche markets are located. Similar to how mountains tend to be isolated from mainland, niche social networks tend to be just that: niche, without much interaction

with the general populace.

- Charred Wasteland of Abandoned Social Networks refers to the tons of websites wanting to take advantage of the success of websites like Facebook to compete or even overpower with them. Even so, these websites tend to not have the userbase or even the expertise towards the long-term, hence they become wastelands: environments devoid of life, except the few life forms that are from these wastelands (in this case, the ones who are loyal to the website or which are sadly few).
- In the Charred Wasteland stands Ozymandias, the titular broken statue of Shelley's poem. In the poem, only "two vast and trunkless legs of stone" and a "shattered visage" are all that remain of the once-great statue and both of these features are present in the comic. According to the poem, the pedestal before the broken statue reads "My name is Ozymandias, king of kings..." hence "friend of friends" below Ozymandias on the map.
- In the north are the Duckface Mountains and the Red Cup Mountains. "Duckface" refers to this incredibly obnoxious facial expression, and "red cup pictures" are any pictures containing party-goers holding disposable red plastic beverage cups. Facebook is absolutely flooded with both types of pictures.
- In the south is Buzzword Bay. Buzzwords are words and phrases that make you sound a lot more topical than you actually are, used to garner attention; again, Facebook status updates are commonly filled with buzzwords.

While Facebook is the largest "country" of the Facebook Region, there are a lot of smaller "countries" that represent smaller social networks.

- Below Facebook (and "Old Facebook' Resistance") is Diaspora, a fully open-source, decentralized, privacy-respecting-and-expecting alternative to Facebook. From what this map tells, Diaspora is little-known, even if Facebook is taken out of the context.
- StudiVZ is a German-speaking social network similar if not a ripped-off version of Facebook.
- XING is a German-speaking social platform similar to LinkedIn.
- Ning is a service to create custom social websites. Its free services shut down in 2010.
- Taringa! is a Spanish-speaking social network that is based on a forums. Copyrighted material is frequently found there.
- Next to the Euro(pean) Gulf is Skyrock (social network site), a French-speaking social network.
- Wer-kennt-wen is a German-social network somewhat like MySpace.
- Nasza-klasa.pl or NK (misspelled on the map as nasa-klasz.pl), is a Polish-speaking social network based on school relationships.
- Badoo is a social network primarily based on dating and picture-sharing.
- Classmates.com is a service in which the user can meet classmates that came from the same high school. The website is probably best known by its memetic advertisement that said "She married him??!! And they've got 7 kids??" (Incidentally, there is more to the coupled picture than what the advertisement says.)

- Myspace is a social networking website that is a kind of proto-Facebook: users could customize their one-page websites with whatever they wanted, make their interests and daily lives public, and interact with other users. Back in the mid 2000s, MySpace was the largest social network, many people using the website; however, the surprisingly-less-customizable Facebook ended up taking the place of MySpace. The "bands" country of MySpace refers to how a lot of bands in the day advertised and interacted using the website. Indeed, the latest incarnation of MySpace (in terms of 2013) is more oriented towards band members.
- LinkedIn is a social network aimed towards people in the workplace, which is why it is adjacent to Corporate Bay.
- Orkut was one of Google's first social networks before Google made Google+. It shut down in 2014.
- Hi5 is a social network that is very popular among people in Latin America.
- Renren (, "people" in Chinese) is "a Chinese copy of Facebook."
- Bebo was a social network popular in the United Kingdom and Ireland. It went bankrupt in 2013 and will move away from social networking and into apps.
- Friendster - One of the first major social networks, it has fallen way off in usage in recent years and was eclipsed by MySpace. It is still popular in Asia.
- V Kontakte or VK, is the second largest social network service in Europe after Facebook. It is available in several languages, but particularly popular among Russian-speaking users around the world.

- Netlog is a Belgian social networking website specifically targeted at the global youth demographic.
- Mixi is an online Japanese social networking service.
- Qzone is a social networking website, which is big in China. According to a report published by Tencent, possibly surpassing other social networking websites like Facebook and MySpace in China.
- Tuenti is a Spain-based, social networking service, that has been referred to as the "Spanish Facebook."
- Cloob is a Persian-language social networking website, mainly popular in Iran. After the locally (and internationally) popular social networking website Orkut was blocked by the Iranian government, a series of local sites and networks, including Cloob, emerged to fill the gap.
- Kaixin001 is a social networking website which ranks as the 13th most popular website in China and 67th overall.
- Piczo was a privately held blog website for teens. In November 2012, Piczo.com shut down.
- Odnoklassniki is a social network service for classmates and old friends. It is popular in Russia and former Soviet Republics.
- Adult FriendFinder is a pornographic dating site.
- Match.com is a dating site, mainly targeted at people looking for marriage.
- Ok Cupid is another dating site, however it has been owned by Match.com since 2011.
- PlentyofFish is yet another dating site, also owned by Match.com since June 2015.

- Sulawesi is a real-life island in the Indonesian archipelago. It also appears in 256: Online Communities.

MMO Isle[edit]

MMOs (short form of "Massive Multiplayer Online Game") are online games where multiple people take the role of a character and play in a setting hosted by the game.

- Habbo Hotel is a website where someone creates a human avatar and interacts in a virtual world that is not that different from the one in real life.
- Club Penguin is Disney's former MMO where someone creates a penguin avatar and interacts with other in a more polar, cartoony setting. Club Penguin is aimed towards children. It has been shut down near the end of March 2017.
- Maple Story is an MMO that has a more natural setting. The most distinguishing feature of Maple Story is its cartoony pixel art.
- GameFAQs, while not an MMO, is a website that has the largest repository of walkthroughs, that is, guides that help someone beat a game. GameFAQs is notable for not only its large repository of walkthroughs of games that are across an extreme variety of consoles, handhelds, and even computers (not all of them MMOs), but also the drama that is rumoured to happen in the GameFAQs forums.
- IGN (full: Imagine Games Network), while also not an MMO, is the largest website that gives news on video games in general, not just MMOs. Each of the games mentioned in the site have pages that have summaries, reviews, screenshots, other art, videos, and links to news related to its games.

- FFXI (full: Final Fantasy XI) is an MMO from SquareEnix, being the first MMO of the popular Final Fantasy series.
- Runescape is an older MMO.
- Starcraft II is a realtime strategy game with a science fiction setting that heavily involves space travel. While technically not an MMO, it has a significant online multiplayer component.
- WoW (full: World of Warcraft) is the definitive MMO, being not only the most popular and one of the longest-running but also the most expansive (having its own spinoff games, comic books, novels, and even figurines), WOW giving the idea of how an MMO should be. A player can choose from a variety of races, each with its own heavy history.
- Second Life is similar to Habbo, albeit with a bigger suspension of disbelief (one example being that the player does not need to be a human) and in a 3D setting.
- NationStates is a text-based political simulation game. Notably, some of its traffic comes not from the actual game (which is optional), but the extensive set of political, roleplaying, and general forums attached.
- Urban Dead described itself as "A Massively Multi-Player Web-Based Zombie Apocalypse", which sums it up pretty well. It was finally closed down on 2025-03-14, reportedly with 7893 characters still actively playing until the end, 6087 of them still standing (and 29 Christmas Trees).
- KoL (full: Kingdom of Loathing) is a comedic browser-based MMO-ish RPG with minimalistic stick-figure art.
- CDC Games is a Chinese company reputed to be the largest MMORPG distributor.

- EVE Online is a science fiction MMO which is notable because of its virtual economy.
- Gaia or Gaia Online, while not an MMO, is a forum oriented towards pop culture, including video games and Japanese media. Its most notable feature is the heavy customization possible of a member's pixel-art avatar. Its members tend to roleplay a lot, albeit in a more written, story-based form. Gaia has gained a reputation with its members stealing art and causing drama. The ferry that links the gaia island with 4chan was most likely due to the "boxxy" row, where vlogger boxxy posted videos of her using gaia, which then were circulated on 4chan. This resulted in a division of the sites users, and many more hacking attacks, including a DDOS attack on 4chan itself.
- EverQuest (full: EverQuest) is one of the first MMO's, it's still running and has a huge number of expansions.
- UO (full: Ultima Online) along with EverQuest this was one of the first and longest running MMO's.
- CoH or City of Heroes was a superhero-based MMORPG that was shut down November 2012.
- Atlantica (full: Atlantica Online) is a turn-based MMORPG.
- Lineage is a Korean MMORPG, it's North American servers were closed 2011/06/29 due to being unprofitable.
- Lineage II is a Korean MMORPG, mainly played in Asia along with its predecessor. It adopted a Free to Play model on 2011/11/30.
- SubSpace was a 2D, topdown shooter released in 1997. The servers have been shut down, but it continues to operate through the work of fans. It's widely considered an early entry into the MMO genre due to its unprecedentedly high player

count.

Other notable regions include:

- The Mountains of Steam, referring to the game distribution service Steam where people can buy and download video games in general, not just MMOs. There is also an extensive community where users can share content, and instant messaging chat by text, voice, or game streaming.
- River Grind refers to "grinding." In most MMOs, the character is a fighter of some sorts, yet starts at a level 1, signifying the character's aptitude level in combat. The character can level up and gain more aptitude levels through earning experience, of which the most reliable and otherwise common way is the process of "grinding," that is, repeatedly fighting opposing monsters (sometimes of a level notably lower than your character's), gaining experience points from winning these battles until your character gains a level, that is, "levels up". While a practical necessity in strengthening the character, this process can be tiresome, hence the expression "grinding."
- Spawn Camp refers to "spawn points", the places where AI-powered enemies and players who have died in-game respawn, and the act of "spawn camping", in which the player character simply stands behind or around the spawn points to fight the enemy creatures or respawning players as soon as they appear.
- Gulf of Lag refers to how the MMO can be slowed down a considerable amount due to the large amount of players simultaneously using the same server, this congestion bogging down the server and frustrating the users.

- End Guy for the Internet refers to "end bosses," the last — and usually hardest to defeat — "bad guy" in a game (or a section of a game).

YouTube Region[edit]

The YouTube region refers to websites that are based on user-created content.

YouTube is the definitive video website where people can upload videos with the purpose of public viewing, ranging from home movies through official music videos through Let's Plays of people playing video games to questionably-legal uploads of cartoons and films. Google had purchased YouTube.

Many of the sites on the map are just references to viral videos at YouTube:

- Viral Shores refers to how viral videos (whether they be viral marketing or simply memes) tend to proliferate on YouTube.
- Britney likely refers to pop singer Britney Spears and the "Leave Britney Alone" guy.
- Maru Gulf refers to Maru the Cat, a YouTube celebrity also mentioned in xkcd.
- Prairie Dog Habitat likely refers to the viral video Dramatic Chipmunk (which is actually a Prairie Dog).
- Rick Rolling Hills references, well, Rickrolling. More information here. The "deserted" note likely refers to how Rick Astley himself is tired of the meme, or again, how people tend to leave the video upon getting "Rick Roll'd," never actually going to the video with the express purpose of viewing the video. It could also refer to the lyric in the song, "Never gonna tell a lie

and desert you".

- Lunar Landing Soundstage is, of course, a reference to the Moon landing conspiracy theories, which Randall has railed on before.
- OK Go Bay refers to the band "OK Go" who have multiple viral music videos on YouTube, most famously "Here it goes again" featuring treadmills.

The HTML5 swamp refers to YouTube's spotty support of HTML 5 (an update on HTML that is frequently touting its media capabilities, making HTML 5 a viable alternative to Flash). Of course, by the time the comic was written, HTML 5 was still in its infancy. The Music Video Bay refers to the amount of music videos (official or otherwise) are present in YouTube.

Other counties of the YouTube region include:

- vimeo, a website where people tend to showcase artistic content that they made on their own, notably independent studios.

Snob Sound:

- Flickr, a website where people can upload and share photographs they took.
- Fotolog, a photo website very popular in South America in 2004-2008, which was used as a social network.
- Last.fm, a music website that is notable of its "scrobbling" feature.
- deviantArt, the largest art website, where people can upload, sell, and buy not only art itself, but also video, audio, Flash-work, and even skins (the original purpose of deviantArt).

While many big-name/professional people and organizations have their works in deviantArt, the site is more infamous for the large amount of people who upload low-quality fan-art and fan-characters, most notably of media from Japan. Another point of infamy is the large amount of drama that can happen in the website.

- Newgrounds, a website that hosts art, (Flash-based) videos, audio, and (Flash-based) games to which other users can comment and rate. Even so, content from Newgrounds tends to be obscene, though there is a filtering system if a viewer does not wish to see obscene content.
- Chatroulette is a website where people are randomly paired up with each other and video/text chat.
- Brickshelf is the online resource for LEGO fans.
- Tumblr, where people could make a blog and post text, pictures, video, audio, quotes, and links. The most distinguishing feature is the ability to "reblog" these posts from other's people's blogs into the user's own blog. Notable features of Tumblr include sketchblogs (where people upload their sketches), Ask blogs (where people answer questions other users ask, the moderators of these blogs usually pretending to be a character from a form of media), and the large amount of "social justice" (a highly controversial political movement). (See also 1043: Ablogalypse.)
- b3ta is a popular British website, described as a "puerile digital arts community" by The Guardian.

The Isle of teenagers who just discovered macroeconomics is a joke about how teenagers tend to think that the world and the economy are a lot simpler than they actually are. Combined with the typical internet mindset, this leads to a lot of teenagers posting

blogs and videos and comments on blogs and videos describing how idiotic the government and other red-tape-related adults are.

The Snob Sound could refer to the large amount of people who look down on others in the surrounding websites (one example being an original artist looking down on people who draw mainly fan-art). The Iraq is a reference to Miss Teen USA 2007, in which Ms. Teen South Carolina, Lauren Katlin, said "I believe that our education like such as in South Africa and the Iraq everywhere like such as...the US should help the US and should help South Africa and should help the Iraq and the Asian countries so we are able to build up our future." The usage of "the Iraq" has become a meme.

Twitter Region[edit]

- Bieber Bay is a reference to Justin Bieber, a pop singer whose singing sprouted on YouTube and became very popular on Twitter and other social media. He is very much vilified because of his rather feminine appearance and his hordes of fans (called "Beliebers") that seem to support him to ridiculous extents. Lately, though, Justin Beiber has taken a "bad boy" attitude because of all the Beliebers who are willing to defend him no matter what, him partaking in a lot of questionable activities that include tattoos, questionably-legal substances, and buying prostitution, thus lowering his popularity in the general populace.
- Google Buzz is a former social network attempted by Google. It has since been shut down.
- Bit.Ly Mountains is a reference to the URL shortening service bit.ly.

- Kanye's Isle of Sadness is a reference to the musician Kanye West, whose Twitter, at the time, was famously introspective and stream-of-consciousness.
- Sarah Palin USA is the Twitter handle of former politician Sarah Palin.
- Clueless Politician Coast is a reference to the number of politicians on Twitter and other social networks who repeatedly share clueless updates that more often create an uproar than help their election chances.
- Desert of Food Updates is a reference to the number of pictures of food that are shared on social media (especially Twitter). There has even been some controversy on posting such pictures.
- Journalists Trying to Find the Cutting Edge is referencing journalists on Twitter trying to keep up with the way that news is gathered and delivered now, despite usually working for a newspaper that publishes once a day.
- SHAQ is a reference to the former NBA basketball player, Shaq.
- identi.ca is an open source social networking and micro-blogging service, being an alternative to Twitter.
- Breaking! Waves is a pun on the fact that so many people used the word "Breaking" at the beginning of tweets that do not warrant that tag that the word has lost most of its meaning and become a joke. It is a pun because waves "break" on the shore.
- Web 3.0 refers to the unofficial term Web 2.0. In this case, "Web 1.0" refers to websites that give information to users. Web 2.0 refers to websites where the users themselves create content. Web 3.0 has sometimes been used as a term for semantic web, a machine-readable version of the web, but this usage is far from universal.

- Hashtag games whose popularity confuses and depresses you refers to the game where a user posts something under a particular hashtag and others respond with their own ideas, all tagged under the same phrase. This has been very popular for no clear reason, as Randall notes.

Geotagged Bay[edit]

- Yelp is a website where people post reviews of real-life public locations (one example being restaurants).
- Geocaching is a worldwide GPS scavenger hunt where users upload positions of caches and others will find them and log it online.
- Foursquare is a location-based social network.
- Latitude refers to Google Latitude.

Troll Bay and the Sea of Memes[edit]

- Reddit is the self-described "front page of the Internet" in which users submit stories, photos and videos and the best are "up-voted" to the top of the page.
- Wikipedia Talk Pages refer to the pages where Wikipedia editors ostensibly discuss how to improve articles.
- Wikia (later Fandom) is a website offering free-of-charge wiki hosting, using a variant of Wikimedia's MediaWiki, allowing users to create user-editable encyclopedias of just about any subject matter, although it has more recently introduced an entertainment blog named "Fandom powered by Wikia" and eventually adopted that branding for the wiki farm as well.
- StumbleUpon was a website-sharing service, it shut down in 2018.
- Delicious is a bookmarking and bookmark-sharing service.

- Digg is a former competitor to Reddit in the social-news sphere, but now has been sold and restarted as an aggregator of news stories. The lifeboats refer to the mass exodus of users from Digg to rival news aggregator Reddit that occurred after Digg's glitchy and unpopular "v4" redesign in August 2010.
- Slashdot, labeled "/" on the map, is a technical news site.
- MetaFilter, labeled "MeFi" on the map, is a long-running community blog.
- Fark is a community website that allows members to comment on news articles from other sites.
- YTMND is an acronym for "You're The Man Now, Dog!" It's also a community in which users can create meme-type nonsense by playing music over an image (either static or animated).
- Free Republic is a right-wing conservative activist forum.

Skype Region[edit]

The Skype Region refers to different IM, or Instant Messaging services, that enable almost-real-time text chatting between multiple people. These often allow services like voice chat and even video calls.

- Skype is, according to Randall, the most popular of these among the internet. It has many features to allow peer-to-peer voice chats, as well as allowing calls to be made at a price to actual phones.
- AIM or AOL Instant Messenger is a chat client created by AOL.
- GG or Gadu-Gadu is an instant messenger client popular in Poland.

- Yahoo Messenger is an instant messenger client by Yahoo.
- Google Talk is a voice/video chatting service from Google (that Google has been replacing with Hangouts). Google Talk also has an invasion fleet at its shores.
- ICQ is an older messaging service, albeit with an 18+ requirement (despite pornography not being the point of ICQ).
- Windows Live Messenger, or "MSN", was the messaging service of Microsoft before Microsoft bought Skype. MSN was useful in that people could draw and send pictures to other chatters.
- Usenet was one of the original ways to communicate on the internet, though people can download (copyrighted) files through the service. Since it is still in use by some, it gets the tag "Still Around!" on the map.
- IRC Isles refers to the ancestor of Internet-powered chatting. People would have connected to a server and spoke publicly. IRC is still in use (as of 2014), notably in getting help from other users. One of those isles is #xkcd which is an IRC community around xkcd.

Bay of Drama[edit]

- FanFiction.net is a website where people can submit their fanfiction (stories by fans written about other peoples' media, normally that about popular media). The website tends to have people that are not helpful to those who legitimately want critique of their own stories.
- Xanga is a blogging service that, while popular at its time, lost out to...
- LiveJournal was the most popular blogging service before Tumblr.

- ONYD - Reference to Oh No You Didn't, which is explained in the Blogosphere region.
- Dreamwidth is a LiveJournal fork emphasizing its open-source nature.

Blogosphere[edit]

The Blogosphere region contains several general blog topics.

- Photo Blogs are commonly used to chronicle the lives of the authors through photographs.
- Diary Blogs are another popular use of blogs (and, in fact, the original use) where authors write commentary about their lives.
- Bay of Grammar Pedantry deals with the fact that, whether due to a lack of proper education, a habit of using "chat-speak" in the text-limited SMS and MMS, or simply due to the (generally) more relaxed nature of the Internet, blog authors tend to write with horrible composition, a point of annoyance to a lot of other people due to the subsequent increased difficulty of reading the horribly-written material.
- Fandom Blogs are blogs created by a "fandom" which is a community of fans. A fandom blog deals with the subject matter of the respective fandom.
- Sea of Zero (0) Comments refers to blogs that get very little attention and therefore have no comments.
- SpamBlog Straits references spammers who use blogs to increase the number of links to their site to try to game search engines.
- OffTopic.com is a general interest forum that refers to itself as "the largest general discussion forum on the internet."
- Many more straightforward blogs, including:

Writing/Poetry

Gossip Blogs

Political Blogs

Music Blogs

Tech Blogs

Business Blogs

Corporate Blogs

Religious Blogs

Miscellaneous Blogs

- Blog Blogs - These can refer to blogs that talk about the matter about blogging itself, though they can also refer to blogs which authors use in talking about blogging.

Blogosphere (Core Region)[edit]

Gossip Blogs:

Each blog below focuses on gossip surrounding celebrities and other well-known persons.

- Jezebel is a liberally feminist blog, hosted by Gawker.
- Deadline is an online entertainment news magazine.
- TMZ is a celebrity news website.
- Gawker is a blog that is the host of other blogs.
- LJ Oh No They Didn't - LiveJournal Oh No They Didn't - Oh No They Didn't, also known as ONTD, is the largest community on LiveJournal with over 100,000 members. The community focuses on celebrity gossip and pop culture with

most of its posts aggregated from other gossip blogs.

- Doucheblog refers to blogs that were once insightful but that spiraled into long rants due to relationship changes of their authors.
- Isle of Mockery is a reference to the fact that some of what these blogs do is mock celebrities or other for doing or saying stupid things on camera.

Liberal Blogs:

Each blog below focuses on American political news with a "liberal" or "progressive" slant. These blogs tend to lean for the Democratic party.

- Huffington Post is a news blog.
- Paul Krugman is an American economist who considers himself a liberal.
- Daily Beast is a news and opinion website focusing on politics and pop culture.
- TPM is a political journal run by Josh Marshall.
- Ezra Klein used to have his own site at the Washington Post, but is now the editor of [Vox.com].
- Think Progress is a political news blog.
- Kos is another political blog.

Bay of Flame:

- Politics Daily is a political journalism website launched by AOL.
- CNN Political Ticker is CNN's political blog.
- Mediaite is a news and opinion blog covering politics and

entertainment in the media.

- NY Times is one of the most famous newspapers, thus the comparatively large size of its island.
- The Talk is a talk show on CBS that discusses the latest headlines "through the eyes of mothers."
- Libertarian Isle (shaped like a Nolan Chart)

Conservative Blogs:

Each blog below focuses on American political news with a "conservative" or Republican slant.

- Pajamas Media is a media company and operator of conservative news.
- Michelle Malkin is a conservative blogger, political commentator, and author.
- Hot Air is a news blog founded by Michelle Malkin.
- Red State is a political blog.
- American Thinker is a daily online magazine focused on politics.
- Townhall is a web publication and print magazine.

Tech Blogs:

- Boy Genius Report is a weblog that focuses on technology and consumer gadgets.
- Gizmodo is a news and opinion blog, hosted by Gawker, that talks about life's more technological matters.
- Engadget is another technology-oriented, albeit independent, blog.
- Crunchgear is a blog that reviews gadgets and other hardware.

- Techcrunch is an online publisher of technology industry news.
- Joystiq is a news and opinion blog that focuses on gaming.
- Kotaku is another gaming-oriented news/opinion blog, the main difference being that Kotaku is owned by Gawker.

Assorted:

- BoingBoing is "i blog about wonderful things", the topics being quite random.
- Lifehacker is another Gawker blog, is a blog that teaches people how to simplify their lives through 'lifehacking', that is, using their resources in creative ways. While the subject matter is life in general, there is a significant technological slant.
- Deadspin is a sports and sports gossip blog founded by Will Leitch. It has since been acquired by Gawker
- Meatorama is a blog that talks about cooking meat.

QQ Region[edit]

- Baidu Baike (, "Baidu Encyclopedia") and Hudong (, "Interactive Encyclopedia") are two Chinese online encyclopedias. Baidu Baike is powered by the same company as Baidu, the search engine popular in China.
- The Ma Le Ge Bi and the Grass Mud Horse Bay refer to the Baidu 10 Mythical Creatures.
- The Location of Jia Junpeng refers to the Internet meme of Jia Junpeng in 2009 in China.
- Tencent QQ is a Chinese instant messaging program.
- In English communities "QQ" has several more common definitions:

An emoticon, representing a face with two large, crying eyes.

A synonym for "rage quit", in which a video game player quits the game out of sheer frustration. It originated in Warcraft II multiplayer, where pressing Ctrl+Q+Q would quit the game, and became more widely known in World of Warcraft.

These definitions are commonly combined, usually to mock the "rage quitter".

- River Crabs () is a euphemism for internet censorship in China.
- The Gulf of China refers to how sites in the region are based in People's Republic of China ("Red China"). The Great Firewall refers to The Great Firewall of China, a pun on The Great Wall of China. Similar to how The Great Wall of China was meant to keep intruding nations out of the then-capital of the city, The Great Firewall of China is meant to keep visitors from visiting censored websites. Oddly other Chinese websites (Qzone, Renren etc.) are not enclosed in this zone. It also resembles the Nine-Dash Line commonly drawn on Chinese maps that indicates a vague territorial claim.

Forums Islands[edit]

Forums are websites where one person post a topic to which other people can discuss.

While the map has a zoomed in version, this article shall discuss the two bigger islands, first.

- 2channel is a Japanese imageboard that was actually the original inspiration for 4chan.
- Craigslist is a classified advertisement website with sections

devoted to just about everything... which formerly included prostitution services, hence the The Former Site of Adult Services.

In the zoomed-in map, there is the following:

- 4chan.org is an imageboard in which people can upload pictures while others comment on them. The website is infamous for its loose/often non-existent rules, incredibly vulgar userbase, source of new memes, and spawning of trolls. 4chan's random board, known internally as /b/, is almost constantly flooded with porn and image macros. This is why Randall's incarnation of 4chan is roughly shaped like a penis.
- 420chan and 7chan, other imageboards in the style of 4chan. Their relative lack of popularity and derivative nature leads a lot of 4chan users to mock them; hence, their position on Randall's map suggests that they're mere wads of semen.
- Encyclopedia Dramatica, labeled ED on the map, is a wiki site dedicated to chronicling internet memes and other noteworthy sites, events, people, and anything else that catches their attention, generally in a very satirical manner. The site is heavily populated by 4chan users. Many people are offended by the articles and talks that go on in the wiki and forum, which is perhaps the reason that it appears to be represented as a wad of sperm. The image of sperm also makes sense since ED is used as a messaging center for the group "Anonymous" which is represented in the map as part of the testicles of the 4chan island(see below at the gulf named Anonymous).
- Tunnel to Habbo is a reference to the 2006 Habbo Hotel Raids, in which hundreds of 4chan Anons simultaneously logged onto Habbo Hotel and proceeded to be as obnoxious as possible,

standing in formations of swastikas and penises or body-blocking the swimming pools.

- Catbus Route is likely a reference to Lolcats in general.
- eBaum's World is a media-hosting website founded by Eric Bauman. The site has lost a lot of traffic after (quite valid) accusations of stolen content.
- The gulf labelled Anonymous is most likely a reference to the leaderless, anonymous international network called "Anonymous" which is composed of (mainly) anarchic activist hackers. Anonymous was created on the /b/ messaging board of 4chan, hence why the bay of Anonymous is on the coast of /b/. Also, the fact that the bay is in the "testicles"(/b/) of the 4chan island "penis" is referring to how Anonymous was created on 4chan, in the same way that sperm is created in the testicles of a penis, possibly a subtle jab at the group.

To the south and east is an archipelago of islands representing various regional and special-interest forums. Moving clockwise from 4chan island is

- Storm 2K is an online website hosting information on tropical cyclones and tools for tracking them, and has a forum with multiple categories and threads for discussion on tropical cyclones, as well as multiple tropical cyclone models and reconnaissance information.
- Skyscraper city is an internet forum website for skyscraper hobbyists and enthusiasts.
- An island containing two websites related to women, namely

Wizaz.pl is a Polish website, presumably for women, with a forum filled with discussions mainly about beauty, health,

women, hobbies, and fun.

Baby and bump is a self-described "pregnancy forum, baby and parenting community."

An island containing

- ForoCoches is a very popular Spanish (as in from Spain) forum mainly about automobiles, but holds discussions on virtually any topic.

Bodybuilding.com is(as you can hopefully tell) a website for bodybuilders. It contains a forum for general discussions on bodybuilding that includes topics such as supplements, exercises, and nutrition.

Bokt.nl calls itself the largest community on the topic of horses. A Dutch website, it holds topics about virtually anything involving horses.

Cruise Critic is a website with a large forum about cruises in general.

- Lay it low is a website for discussing lowriding(changing a car so that its ground clearance go lower than the clearance of the original design from the manufacturer.
- Two plus two is a poker & gambling forum
- An island containing:

Fan forum

Face the jury is an online forum, originally founded for users to upload pictures of themselves to be judged by other users

A smaller nearby island is Datalounge

- An island containing gaming-related sites

D2JSP

EA UK

Gametrailers

- Smaller islands next to the D2JSP island are

Steam powered

World of players

Nedgaf

Overclock

- A smaller island of regional and special-interest forums:

Digital Spy, a British media and entertainment news service
onliner.by, a Belarusian digital technology forum

Zona Ford

lowyat, a large Malaysian technology forum
exbil

MacRumors, an Apple news and discussion site

Adjacent to this, an island labelled Whirlpool Forums, a large Australian broadband and technology forum. The drawing reflects Australia being an island continent separated from other countries.

- An island made up of several European forums:

JLA Forums

fok.nl, a Dutch forum site that is one of the largest internet communities in the Netherlands

The Student Room, a British forum and wiki for secondary and tertiary students

boards.ie "Now Ye're talking", a popular Irish forum site

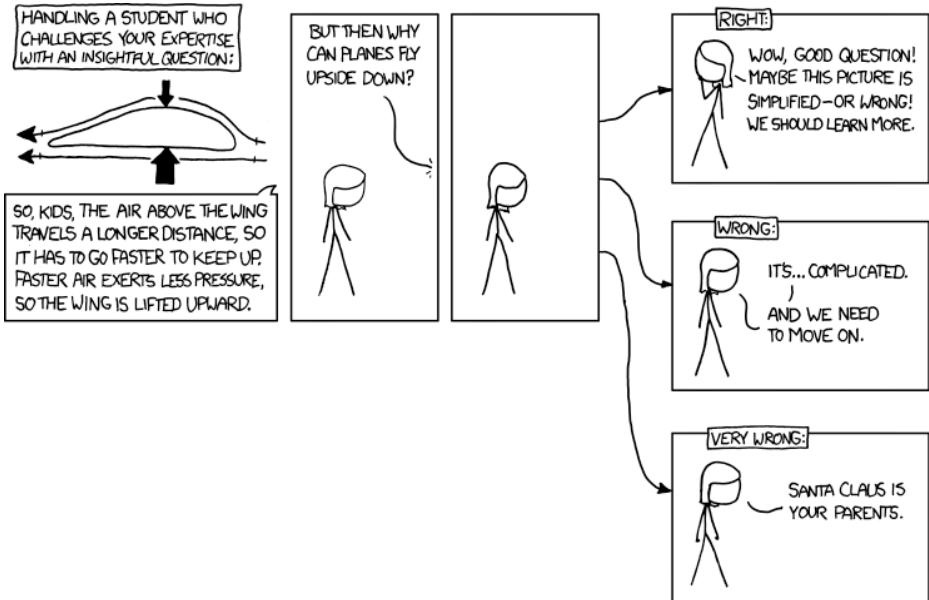
forum.hr, a Croatian forum

rus-chat, possibly a reference to rus-chat.de

- The largest single-site island is SomethingAwful, a website that is meant to showcase all things "awful". SomethingAwful also has a large trollbase, but they tend to be more honorable than the ones from Encyclopedia Dramatica and 4chan. One example is there being a spotty holding of the no-furries rule in the forums. The forums themselves are famous because of the holding of the Let's Plays of Dangan Ronpa and Super Dangan Ronpa 2, which had cooked up public interest to the point of there being an English-language release of the games. (Note that, due to these Let's Plays being in a forums that frequently hides behind a "paywall" that requires a paid account before accessing, the links provided go to their mirrors.)

#803: Airfoil

October 08, 2010



This is a fun explanation to prepare your kids for; it's common and totally wrong. Good lines include 'why does the air have to travel on both sides at the same time?' and 'I saw the Wright brothers plane and those wings were curved the same on the top and bottom!'

Explanation

In the first panel a cross sectional drawing of a plane wing with the air moving around the wing showing a common teaching that an airfoil works because the air on top of the wing must travel faster to "keep up" with the air flowing across the bottom of the wing. The theory goes that, because the air on top of the wing is traveling faster, it must, as a result of Bernoulli's Principle, create an area of lower pressure above the wing; this causes lift (that is, the wing rises) because the higher pressure below the wing (symbolized by thick "up" arrow) pushes it up more than the low pressure above the wing. This is what the teacher Miss Lenhart is teaching as is revealed in the next panel.

As it turns out, this is, to put it mildly, a vast oversimplification of how lift is truly created. Because then a student asks a particularly insightful question: Why, if the theory is true, can planes fly upside down? (If the simple airfoil theory is all that permits planes to stay up in the air, then flying upside down should reverse the pressures — pushing the plane down and causing it to crash.) Miss Lenhart thinks about it and clearly has no answer.

The final set of panels posit three potential responses from Miss Lenhart, upon realizing her theory has been disproved:

In the right one, Miss Lenhart realizes that perhaps the

model she's been using to explain how an airfoil works is wrong (or, at a minimum, too simple). She is curious about it and suggests that this is an area for further exploration, and encourages additional study — in effect, rewarding the student for their insight. It seems that Miss Lenhart has taken the right course as it is shown later in 843: Misconceptions that she wished her students to generally avoid any common misconceptions. The title text also mentions that this is a common misconception and it is (currently) the first mentioned on list of common physics misconceptions on Wikipedia.

In the wrong panel, Miss Lenhart, out of apparent embarrassment, avoids the question entirely, saying simply that it's complicated (and implying that such questions are outside the student's understanding). This way to continue a discussion where you wish to be right was much later used in 1731: Wrong.

In the very wrong panel, not only does Miss Lenhart avoid answering the question, she attempts to distract them (or even punish them for asking such an insightful question - note that in this panel, Miss Lenhart has clenched her fists, suggesting anger) by telling the kids that Santa Claus isn't real but in fact that he is really their parents — something that would obviously distress children if they still believe in Santa Claus (in addition to distracting them from the question they've asked) and constitute harsh punishment for pointing out the teacher's ignorance. Of course most children old enough to be taught about the airflow around plane wings should be too old to believe in Santa. However, if she just

wished to tell them a bit about planes she may have drawn this drawing even in very early grades making the Santa trick effective.

The title text suggests additional reasons for re-thinking the common theory as to how airfoils create lift. It points out that (1) it is absurd to believe the air has to get across the airfoil's two sides in the same amount of time, and (2) the Wright brothers plane's wings were curved the same amount on both sides of the airfoil (the Wright Flyer's wings were concave, like an arch; and thus the curves were in the same direction, not reflected vertically), meaning that the distance that the air needs to travel to hug along each face of the wing is not the dispositive factor in creating lift.

The strip is correct in noting that lift is a far more complicated process than the simple theory posited by Miss Lenhart. While the role of Bernoulli's Principle (that is, the difference in pressures) cannot be entirely discounted, the theory here is vastly too simple. As an initial matter, as suggested by the title text, there is no reason that the air on top of the wing should be compelled to "keep up" with the air on the bottom of the wing. Indeed, as demonstrated by the illustration below, in the time that the air below the wing travels across, the air on top of the wing has not only traveled the length of the entire top of the wing (a distance that may be farther than the distance under the wing, due to its shape), but often additional distance.

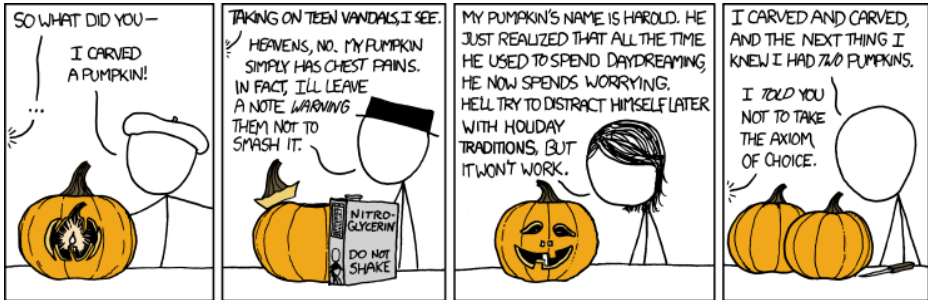
Lift may be more usefully described as resulting from the

deflection of air, although this explanation still does not explain how symmetrical wings will work (at least, absent effects caused by a change in the "angle of attack") nor how a plane may fly upside down. The Wikipedia article on lift provides a more detailed explanation. It in fact gives an explanation as to these two issues. It explains that with zero angle of attack, a symmetrical wing will not generate lift (though it is possible that other factors may generate other slight upward force, such as updrafts, the shape of the plane, and the angle of the engine relative to the wings). It also explains that an asymmetrical (or "cambered") wing may adjust angle of attack to compensate and still generate lift.

Finally, to answer the question in the second panel in a general sense: most planes can't fly upside down for an extended period of time. While many aerobatic aircraft can sustain inverted flight with negative g forces, some others can achieve an inverted attitude only momentarily, and are experiencing positive g forces. Usually the reason for this is not the wings, which function perfectly fine upside down (albeit sometimes at lower efficiency), but the engines, which may not get fuel or oil under such conditions. It has to also be noted that if angle of attack were ignored, movable control surfaces would be useless. Almost any airplane can do a barrel roll or Aileron roll, given sufficient altitude (a Boeing 707 prototype once did this, and so did the Concorde in a demonstration).

#804: Pumpkin Carving

October 11, 2010



The Banach-Tarski theorem was actually first developed by King Solomon, but his gruesome attempts to apply it set back set theory for centuries.

Explanation

This comic is a reference to the American custom of making Jack-O'-Lanterns to set out on porches and front steps for the holiday of Halloween, which occurs on October 31. Typically they are made with pumpkins by emptying the inside leaving a hollow shell, carving a face or design on the side, then placing a light or candle inside. The Jack-O'-Lantern in the 3rd frame is the typical and standard design for a carved pumpkin.

The comic is set up as a typical TV program where an off-screen interviewer asks four (very) different people what they have made out of their Halloween pumpkin. In the official transcript the interviewer that talks in three of the panels is called an Interlocutor: "a person who takes part in dialogue or conversation."

In the first frame, Beret Guy, naturally, stays oddly on-topic by physically carving an image of a pumpkin in his pumpkin. This means his answer, "I carved a pumpkin," could apply to either the image or the medium of his artwork.

In the second frame, Black Hat is shown with a container of nitroglycerin next to his pumpkin. Nitroglycerin is a highly explosive liquid that may explode violently with just a small bump. Black Hat has not carved a hole for his lamp, but it seems he has emptied the inside of the pumpkin as the stem at the top has been removed. This will make it possible to fill up the pumpkin with

nitroglycerin. Teenagers are a rather impulsive and rebellious lot; as Halloween is a night with lots of meticulously erected decorations and more lax parental supervision, troublemaker teens see it as an enticing time to engage in rampant vandalism, including but not limited to pumpkin-smashing. Hence, the off-panel character presumes that Black Hat is setting up a trap to get back at these ne'er-do-wells. To top it off, Black Hat plans to put up a sign warning passers-by to not smash the pumpkin. This would only serve to tempt impulsive teenagers to disturb it, which is very likely what the sadistic and chaos-loving Classhole is hoping for. If he succeeds with his plan, with a completely hollowed out pumpkin of the shown size filled with nitroglycerin, it would seem likely that the resulting explosion would leave a largish crater, flatten wood-framed buildings nearby, shatter windows for blocks in all directions, and be more than sufficient to kill the vandal along with others in the surrounding area. This is clearly overkill for such a petty crime.

Black Hat, rather unconvincingly, insists that his pumpkin is suffering from chest pains, and that the nitroglycerin is merely intended for medical treatment. While it is true that this chemical is used to treat angina (chest pain due to blocked arteries in the heart), nitroglycerin used for this purpose is dispensed in the form of small pills containing only trace amounts, and controlled by prescription. Also, pumpkins are fruits and do thus not contain nervous or circulatory systems of mammalian complexity[citation needed]; even if they

did, the process of pumpkin carving involves hollowing them out, making it a moot point.

In the third frame, Megan is our typical emotional xkcd comic character. She is the only one out of the four who actually carved a typical jack-o'-lantern; however, she is projecting herself onto it, and has named it Harold. Her dialogue suggests it (or he) is suffering from typical holiday depression, with symptoms such as using a lot of time daydreaming, worrying, and trying to distract herself with holiday traditions, but she already knows that it won't work. Some have speculated that this is a possible reference to the classic meme Hide The Pain Harold, but this is highly unlikely; the meme only surfaced in 2011, a year after the comic was published.

In the fourth frame, Cueball is shown in front of two un-carved pumpkins exclaiming that this is the result of carving one pumpkin. He is referencing the Banach-Tarski paradox (which is made clear in the title text), a theorem which states that it is possible to split a three-dimensional ball, in this case a pumpkin, into a finite number of "pieces," and then reassemble these "pieces" into two distinct balls both identical to the original. This paradox has been proven for theoretical shapes, but requires infinitely complicated pieces which are impossible for anything made of physical atoms rather than mathematical points.

The off-screen interviewer in that frame references the Axiom of Choice. This axiom is the foundation for many theorems (including the Banach–Tarski paradox) and is

extremely influential to modern mathematics; however, it has been historically controversial precisely because it enables this kind of weirdness. It is called an "axiom" because it is a statement that is not meant to be proven or disproven—only accepted or rejected depending on the theoretical framework one wishes to work with. Rejecting the Axiom of Choice results in a perfectly coherent alternate form of set theory. Since the proof for the Banach–Tarski paradox relies on accepting the axiom of choice, the interviewer is suggesting Cueball's unexpected result would not have happened without using the axiom.

The title text references a biblical story involving King Solomon. In the story, known as the Judgment of Solomon, two women were brought before him both claiming that a particular child was their own. Solomon tested the women by saying the only solution was to cut the baby in half and give each woman one of the halves, knowing the real mother would fight to save her child's life even if the price was giving up the whole child to the other woman. The joke is that if Solomon had developed the Banach–Tarski theorem first, then he could have actually believed cutting the baby into pieces was a valid solution. In that scenario, he would have tried to make two whole children from the original and given one to each woman. However, since babies are not infinitely divisible,[citation needed] his attempt would have failed miserably and set back set theory for centuries due to the appearance that he has "proved" the theorem wrong. Note that the title text actually mentions

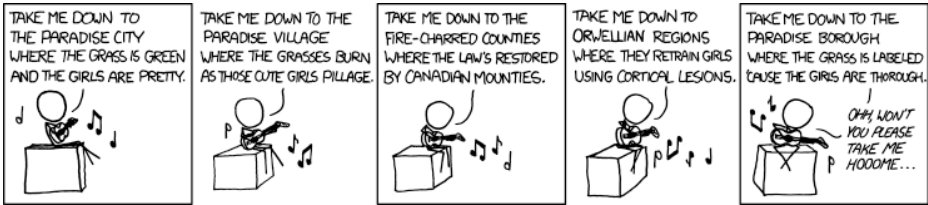
attempts indicating that King Solomon killed several babies in this fashion.

The axiom of choice and set theory was later referenced in 982: Set Theory and, much later, the axiom of choice was mentioned again in the title text of 1724: Proofs.

This comic was released 20 days before Halloween in 2010, possibly to inspire people with some great ideas for their pumpkins. It has been known (particularly by Randall) that people copy his ideas, for instance this earlier post on xkcd based on 249: Chess Photo. Soon after he even made a comic, 254: Comic Fragment, that was supposed to be impossible to copy, which he mentioned himself later (see the explanation).

#805: Paradise City

October 13, 2010



Take me down to the paradise municipality / where the grass is mauve and the girls aren't from this reality.

Explanation

"Paradise City" is a song by the hard rock band Guns N' Roses which appeared on their debut album Appetite for Destruction. It sings of the so-called Paradise City, an idyllic place to which the song's narrator longs to return. The location is contrasted with the depressing reality in which the persona is trapped, using for instance the image of a gas chamber.

In the comic, Cueball can be seen singing different versions of the chorus. In each panel, the word "City" is substituted by another type of location and the rest of the verse is altered accordingly to keep the rhyme scheme (usually awkwardly because he has chosen difficult words to rhyme with).

The development of the city in Cueball's song reveals that the term "Paradise" can be applied to very different and even oppositional scenarios. While the original song describes the city as a rural Eden, some might refute this conception as a bourgeois or agrarian romantic ideal. Others would fear that too much individual freedom might be dangerous and opt for security through control. Especially the picture of the last stanza is a common vision in dystopian literature (e.g. Brave New World): Although the citizens of a future society entirely lack any personal choice or individual freedom, they deem themselves happy because education or thought control present this a necessity for a functioning society.

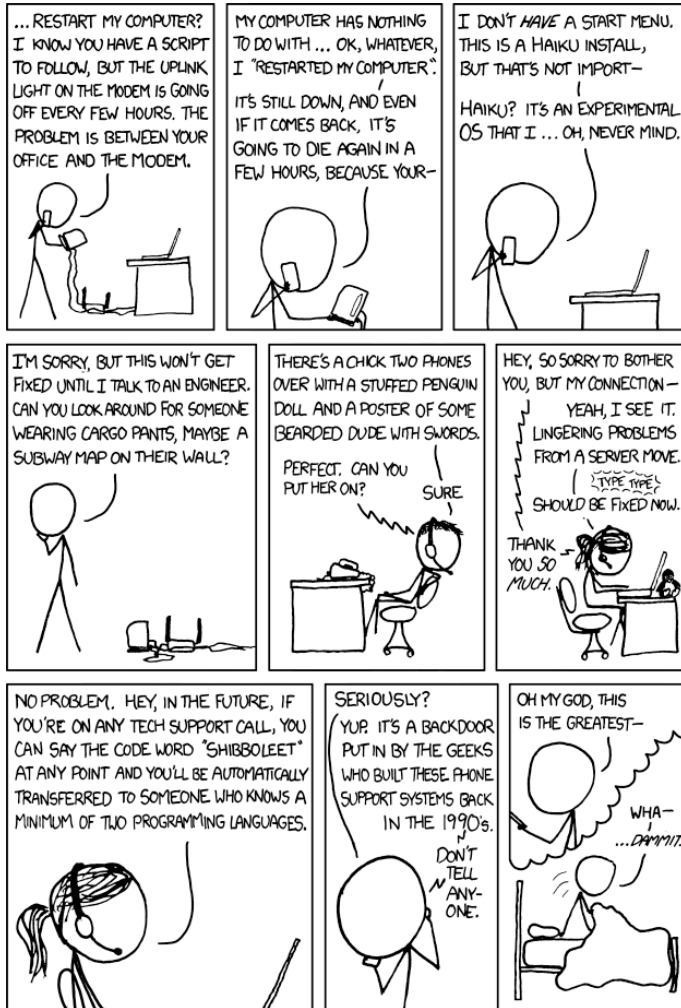
In popular culture, the word "Paradise" is often used to describe a place of bliss and perfect harmony, as in the original religious sense of the term. It is however also frequently linked to the idea of living out one's deepest and darkest desires, therefore in some way to a place of sin. Considering the lifestyle of Guns N' Roses, it can be assumed that the "pretty girls" of the original song are not necessarily chaste.

The most iconic part of Las Vegas is officially named "Paradise", although it is not entirely clear if Cueball is aware of the probable reference of the original song.

The title text suggests that Paradise City is in fact a drug-induced state of ecstasy with strange and colorful hallucinations.

#806: Tech Support

October 15, 2010



I recently had someone ask me to go get a computer and turn it on so I could restart it. He refused to move further in the script until I said I had done that.

Explanation

Cueball runs into some problems with his network connection and contacts his Internet service provider's (ISP's) tech support for help. The customer service agent (represented by Hairy) is not very helpful, giving clearly pre-scripted advice that has nothing to do with Cueball's problem. Cueball gives up and asks to speak to an engineer, i.e. someone more knowledgeable about the technology and suggest to Hairy what to look for. Noticing a woman with black ponytail who has the stuffed Tux penguin on her desk and a poster of a bearded dude with swords (a reference to Richard Stallman particularly as he stands in 345: 1337: Part 5, and a reference to 225: Open Source) he tells Cueball about her and Cueball recognizes the signs of a GNU/Linux geek and asks to talk to her. Hairy transfers him over to the engineer, who immediately recognizes the problem and fixes it. Then she tells him of a secret word (shibboleth - see below) which, if he speaks on the phone, will transfer him to a tech-savvy person able to help him, something installed already back in the 1990's by the geeks of that time. Cueball is elated but then at this point Cueball wakes up and unfortunately discovers the incident to be just a dream.

It's common for technical support lines to be staffed by low-tier workers with minimal technical training, with the primary function of taking the caller through a script of common problems and simple solutions (such as rebooting their computers). This is generally done

because many customers call because of easily resolved problems. Forcing all callers to go through this script is an inexpensive way to resolve such problems, rather than taking up the time of a more highly trained (and presumably better paid) engineer. This practice, however, tends to be highly frustrating for technically skilled people, who can generally resolve simple problems on their own, and only call tech support when a problem genuinely needs engineering support. Even though they may know that the problem isn't with their system, the call center workers are generally trained to go through the entire script, attempting each solution on the list, before moving on, even if the customer knows that the entire exercise is pointless.

Cueball's dream solution (and Randall's, by implication) is to have a special code, known only to those with high technical knowledge, which can be used to bypass the first steps of customer service, transferring them directly to an engineer (defined here as "someone who knows a minimum of two programming languages"). The idea that "the geeks who built these phone support systems" would build in such a backdoor suggests an affinity among computer and electronics nerds, who would want to help one another out. The engineer's request that Cueball not tell anyone suggests that such a system could only be maintained as a secret conspiracy among geeks, as to prevent it being overwhelmed by the general public, and therefore becoming useless.

Cueball is running Haiku, an open source operating system, which is still in a state of active development,

being in an alpha release at the publishing of the comic and in beta since 2018. While low-level tech support operators are given scripts which are predicated on the assumption that many computer problems are actually caused by the actions of clueless end users (as, in fact, they are), it's exceedingly unlikely most of these first-tier operators would have even heard of Haiku, not to mention that their scripts' assumptions would never apply to the sort of person who would be using an experimental OS as opposed to Windows, for instance.

"Shibboleet" is a portmanteau of "shibboleth" and "leet". A "shibboleth" means any word, custom, or other signifier which is used by members of a group to recognize other members or those who are "in the know" about something. Its use originates in the Hebrew Bible, where the precise pronunciation of this word was used to distinguish Gileadites from Ephramites. Leet (based on the word "elite") refers to "leet-speak", a practice of character substitution and abbreviation common across the Internet (or "teh 1n73rn3t", as you would say in leet). Thus, "shibboleet" is a shibboleth used to identify someone whose computer-knowledge is "elite." Leet is again in leet written as 1337 so again a reference back to the 1337 comic series including the comic mentioned above with Stallman. In 2633: Astronomer Hotline a tech support is also asking very silly questions as it is going through a script.

In the title text, Randall mentions that this had happened to him recently and is possibly the reason for this comic.

#807: Connected

October 18, 2010



I'M NOT SURE WHY WE
ROMANTICIZE "YOUNG LOVE."

Or love in general, for that matter. It just leads to the idea that either your love is pure, perfect, and eternal, and you are storybook-compatible in every way with no problems, or you're **LYING** when you say 'I love you'.

Explanation

This comic criticizes our culture's tendency to romanticize young love (such as that portrayed in *Romeo and Juliet* and *Titanic*). Although young lovers do often have intense feelings for their beloved, for many of them, like Megan here, it is an infatuation based on little substance (such as a similar taste in music) and the mercurial gales of teenagers' minds rather than the real compatibility necessary for a long-term relationship.

The title text broadens this criticism to all forms of romance. Randall appears to be stating that it is possible to love someone even if your relationship with that person doesn't conform to the impossibly high standards of "true love" that our culture so highly exalts. In fact, healthy relationships are typically not perfect and require work, change, and compromise rather than continual, effortless bliss.

#808: The Economic Argument

October 20, 2010

CRAZY PHENOMENON IF IT WORKED, COMPANIES WOULD BE USING IT TO MAKE A KILLING IN... ARE THEY?

REMOTE VIEWING	OIL PROSPECTING	
DOWSING		
AURAS	HEALTH CARE COST REDUCTION	
HOMEOPATHY		
REMOTE PRAYER		
ASTROLOGY	FINANCIAL/BUSINESS PLANNING	
TAROT		
CRYSTAL ENERGY	REGULAR ENERGY	
CURSES, HEXES	THE MILITARY	
RELATIVITY	GPS DEVICES	✓
QUANTUM ELECTRODYNAMICS	SEMICONDUCTOR CIRCUIT DESIGN	✓

EVENTUALLY, ARGUING THAT THESE THINGS WORK MEANS ARGUING THAT MODERN CAPITALISM ISN'T *THAT* RUTHLESSLY PROFIT-FOCUSED.

Not to be confused with 'making money selling this stuff to OTHER people who think it works', which corporate accountants and actuaries have zero problems with.

Explanation

The image shows fields of human life that would be greatly improved and/or allow certain people to make a lot of money if some crazy phenomena (mostly paranormal) actually worked in reality or were testable and usable concepts. Crazy phenomena, in this case, means counter-intuitive things that go against common sense and which science often contradicts (though relativity and QM are a major part of physics, they are still counterintuitive and could be considered to sound crazy). As the comic tries to prove, if there were commercial use for it and proofs of it working, there will be high investment made in the technology to use and harness such concepts.

So far only relativity and quantum electrodynamics have major evidence backing them. Specifically, the theory of relativity is heavily embedded into how your Global Positioning System (GPS) device synchronizes with satellites a hundred miles in the air and calculates your current position. The design of modern circuit-boards and other electronic devices is influenced by quantum electrodynamics — smartphones or high capacity hard drives wouldn't be possible without this theory.

The non-scientific/disproved concepts trying to pass as real and scientific are:

- Remote viewing: Alleged ability to see and know things far away with the strength of your mind, without

physically being in that place or using technology (cameras, TV screens and so on).

- Dowsing: Alleged supernatural ability to sense, using two dowsing rods/sticks/pieces of metal where underground water/oil supplies or hidden valuables are.

Both dowsing and remote viewing would have greatly cut costs to oil companies, because it would have made finding new oil sources easier. The U.S. Army did seriously study remote viewing and other paranormal abilities in a series of programs collectively known as the Stargate Project, depicted in the 2004 book and 2009 film *The Men Who Stare at Goats*; however, the project was concluded in 1995 after reviews concluded that the rate of successful divination of actionable intelligence was no greater than that of random chance.

- Auras: Non-scientific belief that every human has an invisible "energy field" that can reveal and/or affect their health and feelings.
- Homeopathy: Pseudoscientific belief that the more diluted a remedy, the more effective it is, and that the remedy should, before dilution, cause similar symptoms to the disease it is said to cure. These "remedies" are often diluted so much that, usually, not even a single molecule of the original substance will remain. It is completely untrue, and proven no more effective than a placebo, so one can instead use much cheaper non-'treated' glucose and have the same effect. It is often advertised as an "alternative medicine".
- Remote Prayer: Non-scientific belief. Trying to help a

person with their health problems by praying/pleading to a greater supernatural force to help them get better. While we're not ones to rag on anybody's religion, we don't have scientific proof or empirical evidence of it working; if anything, intercessory prayer seems to sometimes have a detrimental effect if the person knows they are prayed for (most probably due to causing extra stress).

All three would have revolutionized healthcare if proven to work, which is very, very unlikely. Tim Minchin remarked in his beat poem *Storm* (released the year before this comic, adapted into an animated short film the year after) that "alternative medicine that's been proved to work" is simply..."medicine".

- Astrology: Trying to predict the future by studying the motions of the planets for answers - a non-scientific and very popular belief that tries to look scientific; this was a major focus of astronomy until science began to disprove it in the 1600s.
- Tarot: Trying to predict the future through dealing a special deck of cards.

Both would have revolutionized our business planning, saving lots of money and lives, if true.

- Crystal energy: Non-scientific belief that crystals can store "soul energy" which can be tapped into and used by human beings.

If true and correct, it would have revolutionized the

world's technology by replacing energy sources with crystals.

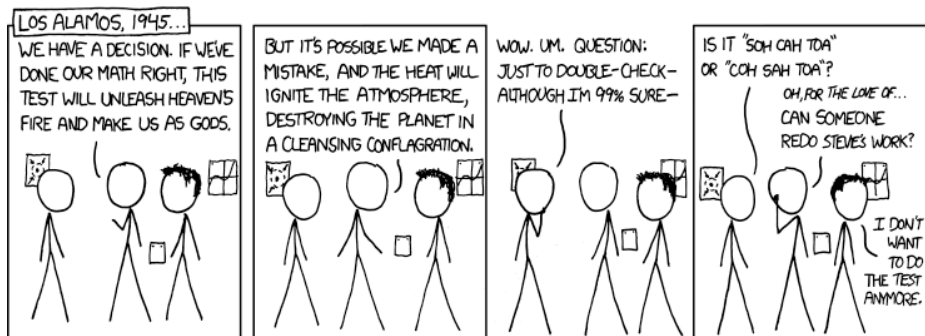
- Curses and hexes: Non-scientific belief that a person can cause supernatural harm to people and things by doing certain magical rituals and mouthing magical words.

If it were true, the military use of such would have proliferated rather quickly.

The title text points out that many people still believe in non-scientific, unproven, and disproved phenomena; thus, it's possible to make a lot of money by selling those (claimed) phenomena to such people (although knowingly selling non-existent phenomena, while claiming that they work, would be fraud, and thus illegal).

#809: Los Alamos

October 22, 2010



The test didn't (spoiler alert) destroy the world, but the fact that they were even doing those calculations makes theirs the coolest jobs ever.

Explanation

This comic refers to the Manhattan Project at Los Alamos, New Mexico, where in 1945 their development of the first nuclear weapon had progressed to the point that they were going to explode "The Gadget" at Trinity Site. There was genuine concern that some unexpected result was possible, including the scenario about the atmosphere igniting. The scientists were almost certain that it would either work as expected, or just be a dud, but were unable to rule out several other scenarios. The test proceeded, and it worked as expected. Note that the "ignition" feared wasn't a chemical reaction (Nitrogen and oxygen reacting chemically is endothermic) but instead a nuclear fusion reaction involving atmospheric nitrogen and oxygen — which is to the atmosphere "burning" in the chemical sense as all nuclear weapons ever built is to a candle.

The joke part at the end is a reference to a common mnemonic device for basic trigonometric functions, namely identifying the relationships of sine, cosine, and tangent with respect to the lengths of a right triangle's edges: sine = opposite over hypotenuse, cosine = adjacent over hypotenuse, and tangent = opposite over adjacent (in other words, SOH CAH TOA.) "Steve" becomes concerned by the seriousness of the situation, and wants to make sure that he has not made a mistake on stuff that should be very elementary to a scientist in his position.

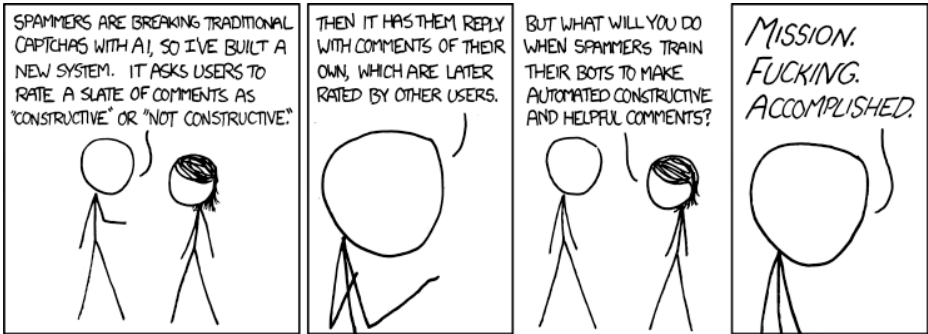
The title text mentions that there are very few jobs where

one can say that with seriousness, as normal jobs do not involve technology capable of destroying worlds.[citation needed]

A Steve is referred to in a similar situation in comic 1532: New Horizons, where his miscalculations screw up the trajectory of the New Horizons space probe, sending it to Earth instead of Pluto. He would be at least 90 years old if it was to be the same Steve, though. A person named Steve also comes up with an inappropriate suggestion in 1672: Women on 20s.

#810: Constructive

October 25, 2010



And what about all the people who won't be able to join the community because they're terrible at making helpful and constructive co-- ... oh.

Explanation

Most online communities (including explain xkcd) face the problem of dissuading spammers from joining and participating. A common solution to this problem is the use of various systems to prevent automated bots' use of the community, while still allowing legitimate users to join. This has resulted in an arms race of sorts between spammers and communities, in which the spammers try to bypass increasingly difficult spam-prevention methods. This CAPTCHA and spamming prevention also has a downside, in that the time it takes to "prove you're human" is sometimes so long as to drive users away because their time is being wasted.

This comic explores the culmination of that arms race, in which an advanced spam-prevention system, built by Cueball, is able to defeat the concept of spamming itself by forcing spammers to contribute constructively to a community.

CAPTCHAs are one of the methods used to prevent lots of automated registering of fake usernames used by bots and spammers. It consists of asking a person to prove that they are human before registering them as user and allowing them to post on sites or forum topics. That is done by using pictures of words and letters that humans may recognize, but bots and OCR software have trouble with.

Now, artificial intelligence (AI) of bots have advanced so

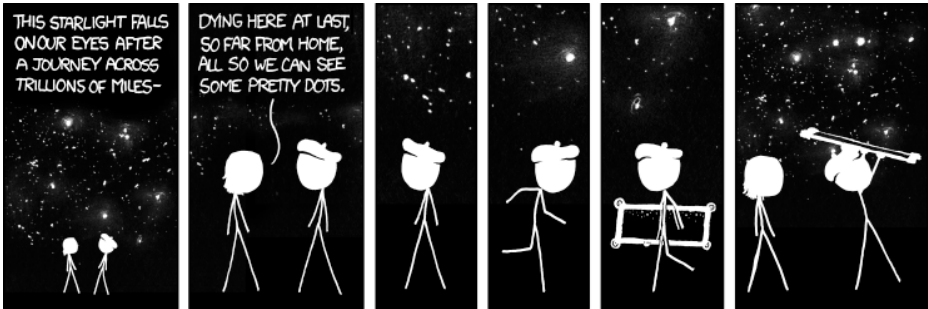
far, that Cueball has invented a new system. It asks the users to rate a slate of comments as constructive or not, then asks them to reply with comments of their own. Megan asks what will happen when spammers find a way around his system, such as making bots that make constructive and helpful comments? Well, it turns out that is what he is trying to accomplish in first place, a thriving community of bots and humans helping its members with constructive and helpful comments, as well as coming one step closer to the singularity. There is, however, one potential workaround to Cueball's system that defeats the whole point of having the conversation be constructive if spammer bots are numerous enough. Spammers may choose to mark unhelpful comments as helpful (something that can be done purely by analyzing the comment itself), thus making it an uphill battle for constructive comments to be seen as such, making this a potentially worse solution than simply letting the spammers in.

The title text investigates the consequences of such system further by thinking of people unable to give constructive and helpful comments, which are a sort of people you don't want in your online community anyway.[citation needed] Or it could mean that in order to join said community, they would have to learn to post helpful and constructive comments, and would then be eligible to join, thus accomplishing Cueball's goal.

CAPTCHAs are a recurring theme on xkcd.

#811: Starlight

October 27, 2010



Don't worry! From the light's point of view, home and your eye are in the same place, and the journey takes no time at all! Relativity saves the day again.

Explanation

Megan talks with Beret Guy about the journey of light through the universe from its source to our eyes. In Megan's opinion, it is very sad that this journey is pointless - light's travel ends only with us seeing "pretty dots" - stars in the sky. Beret Guy then tries to return light to its birthplace by using a mirror, which reflects light back to its source.

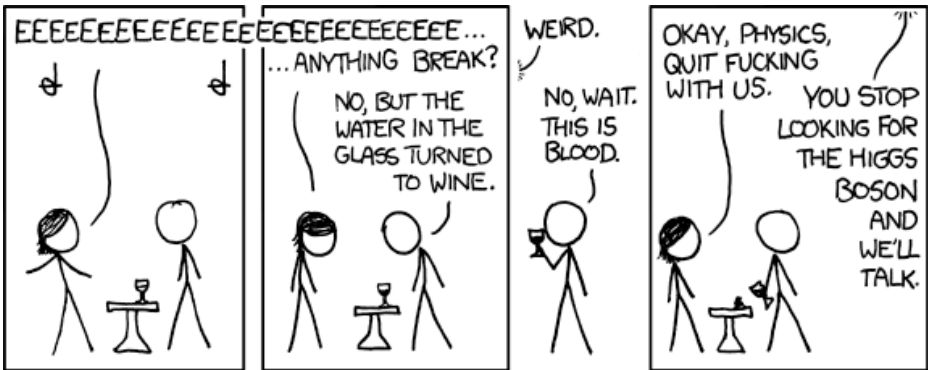
In reality, this would not work. Only a tiny fraction of the photons emanating from a star will reach the mirror and, even if the mirror is held at the perfect orientation, with dispersion (even if the mirror is perfectly smooth, the atmosphere is not) the probability that even one photon will make it back 'home' is effectively nil.

However, if Beret Guy decides to exhibit another one of his strange powers, it is possible that he can find a way to actually find a way to reflect starlight back to 'home'.

The title text is a reference to special relativity, which states that from the point of view of a light particle, the distance is zero because it is moving at the speed of light, so it takes no time to go anywhere. Note that the title text says that relativity saves the day again. This could be a reference to a previous comic 660: Sympathy in which a socially inept physicist touches upon using some consequences of special relativity to save a friend's deceased brother.

October 29, 2010

October 29, 2010



I read in this one article that the breaking of electroweak symmetry is the reason we have SOULS. This guy with a degree said so!

Explanation

In the beginning of the comic, Megan is trying to break a wine glass like an opera singer. This is a rather famous trick where the vocalist sings at the resonant, or natural frequency of the glass and cause it to resonate more and more until it can no longer handle the stress and breaks - for more info, see the Mythbusters episode about the Earthquake Machine. If the resonant frequency of the glass is outside of the singer's range, then putting some water in the glass will lower its resonant frequency. This effect can be used to play different notes on the rim of a glass by varying the amount of water in it. For example, see this video.

While Megan is trying to break the glass by hitting its resonant frequency, she is actually creating something new. This is similar to particle physics where a new particle can be identified by a resonance peak in the differential cross-section of a scattering experiment: Known particles plus some very specific amount of energy lead to the creation of a new particle, the Higgs boson. This is represented in the comic with the water and the pitch of Megan's voice creating blood.

The term "God Particle" was coined in 1993 by physicist Leon M. Lederman to describe the Higgs boson because it's "central to the state of physics today, so crucial to our final understanding of the structure of matter, yet so elusive." He originally called it the "goddamn particle", but this was considered offensive, and his editor

shortened it to just "God particle", maybe to promote interest in the particle from non-academics too. Many people misinterpret the name to be some kind of link between physics and religion, so physics is getting back at them by playing pranks that resemble famous miracles from Christian tradition:

- Jesus turned water into wine at the marriage in Cana.
- The first of the ten plagues in Egypt turned all of the water into blood — the rivers, canals, ponds, pools, and every sort of container holding water.
- The wine turning into blood is also a reference to the Catholic ritual of Transubstantiation.

Notably, the Higgs Boson was discovered in 2012, 2 years after this comic was released. So at the time, physicists were still looking for the particle.

Notice that, in the last panel, the blood seems to have dripped out of Cueball's glass onto the table and solidified instantly, further proof that physics doesn't apply in this scenario.

The title text refers to the breaking of electroweak symmetry. According to the standard model of particle physics, the electromagnetic and the weak interactions were once unified into a single 'electroweak interaction'. Shortly after the Big Bang, the universe underwent a phase transition that split the electroweak interaction into the electromagnetic and weak interactions that we observe today. The word 'symmetry' refers to the $SU(2) \times U(1)$ gauge symmetry that is satisfied by the

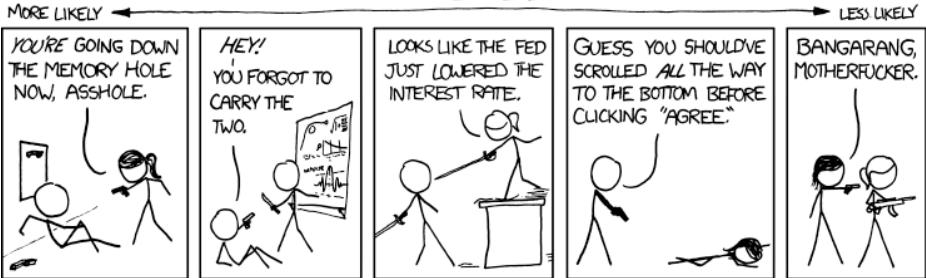
unified electroweak, but has been spontaneously broken in the phase transition. As with many scientific theories, these can be used incorrectly in order to lend credibility to unrelated and nonsensical claims. This particular case is an instance of "quantum woo." Similarly, a degree can be used to lend the appearance of credibility to a person pushing such an idea, regardless of what field it was earned in or whether said person has any competence.

Another comic, albeit much later, about quantum mechanics and souls is 1240: Quantum Mechanics

#813: One-Liners

November 01, 2010

PROBABILITY OF PHRASES BECOMING ACTION MOVIE ONE-LINERS:



'Upgrade to the latest version of Adobe Flash player to view **THIS** content, bitch.' ::triggers detonator::

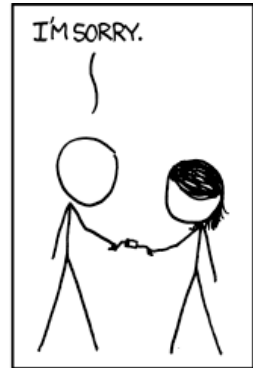
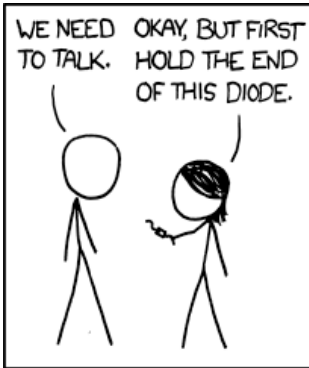
Explanation

In this comic, Randall presents a series of phrases, ordered by how likely they are to be used as a one-liner by a character in an action movie. One-liners are short, punchy phrases, typically witty or funny, and are routinely used in films by the antagonist to taunt the protagonist (or vice versa). The perfect one-liner leaves the recipient at a loss for a comeback, and should make sense immediately. If the phrase doesn't make sense or has to be explained, the effect is lost.

The phrases shown adhere to the witty and punchy stereotype of a classical one-liner, but quickly become more niche and only understandable for an informed subgroup.

#814: Diode

November 03, 2010



And the worst part is you won't apologize.

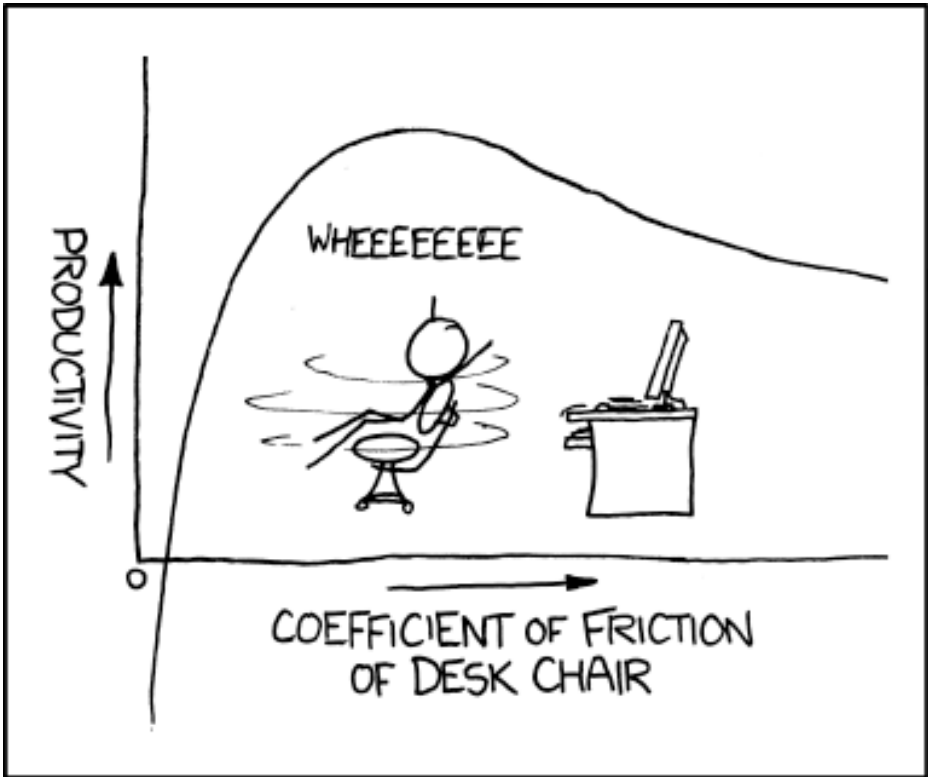
Explanation

A diode is an electronic component that, to put it simply, blocks current traveling in one direction, but allows current going the other way. Diodes are a common component of digital circuits, such as those found in a computer. The end that rejects incoming current is marked with a line or band of paint.

The comic is describing a common frustration in relationships. Sometimes one party in a relationship will feel that the other isn't listening to them, even though they themselves are being as open as possible. This is analogous to the function of a diode, which the comic indicates by literally introducing a diode into the dialogue. The diode introduced has the banded end being held by Cueball. This means his words are blocked by the diode, while Megan's flows through to him; she never receives his protest, his pain, or his apology and thus does not feel she did anything wrong. Megan could possibly have used the diode as a way to avoid apologizing, but she must have known she risked looking like an idiot by not perceiving his apology, as illustrated by the title text: Megan didn't perceive Cueball's apology, due to it being blocked by the diode, so she berates Cueball for not apologizing. An alternative explanation is that Megan won't apologize, as she doesn't hear Cueball's complaint, and that Cueball is unhappy with her for this.

#815: Mu

November 05, 2010



As the CoKF approaches 0, productivity goes negative as you pull **OTHER** people into chair-spinning contests.

Explanation

The title of the comic, "Mu", refers to the symbol μ . This letter of the Greek alphabet is commonly used in mathematics and physics in many cases and here it denotes the coefficient of friction which describes the ratio of the force of friction between two connected bodies.

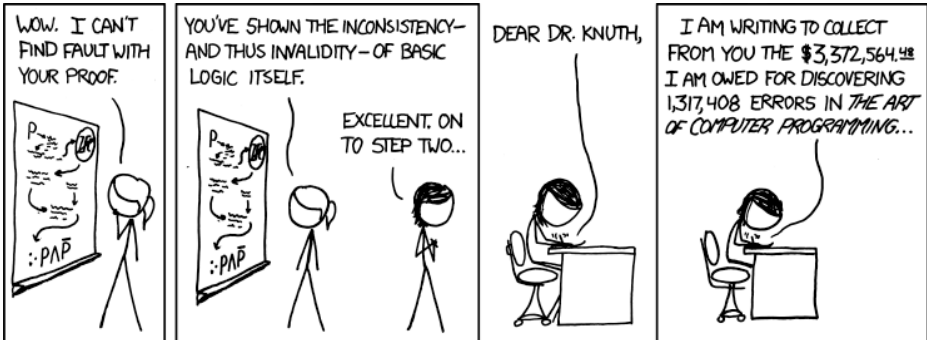
Desk chairs usually have the ability to turn and some chairs spin more easily than others. A desk chair which spins easily could be described as having a low coefficient of friction. The horizontal axis of the chart ranges from very easy to spin on the left, to very difficult to spin on the right. The comic shows that if the chair is too difficult to turn it is annoying and impacts productivity. However, if it is too low spinning one's chair becomes more fun than working.

The title text notes that if your chair spins too easily, you can actually hurt other people's productivity by spinning competitively.

In classical mechanics the angular momentum (see 162: Angular Momentum) can be transferred to other objects when a rotating object does not have any friction and is rotating very fast. For example, when a reaction wheel inside a spacecraft changes its speed, it turns the entire satellite around. None of this is intuitive, as shown in this video.

#816: Applied Math

November 08, 2010



Dear Reader: Enclosed is a check for ninety-eight cents. Using your work, I have proven that this equals the amount you requested.

Explanation

Donald Knuth is a computer scientist who has written several computer science textbooks and he offers monetary rewards for anyone finding errors in his publications. The first error found in each book is worth US\$2.56 ($256=2^8$ is a very important number in the IT domain). Other suggestions are worth less than \$2.56, but a check is still sent out if Dr. Knuth finds them to be reasonable.

Megan uses a proof to invalidate logic itself. (Of course, this means that her proof paradoxically renders itself meaningless. If logic has been disproven, her proof has no value.) According to the logic symbols " $P \wedge P$ " at the bottom of the proof, she has proved that "the proposition (statement) is true and the proposition is false," i.e. "something is both true and false." (Specifically, means "therefore", presenting the outcome of the preceding proof. P represents that a proposition is true, stands for "and", and an overbar negates a proposition such that $\neg P$ represents that the (same) proposition is false. The negate symbol, \neg , is also used for this purpose, when placed in front of a symbol, so that " $P \wedge \neg P$ " is another form of this statement.) If someone were to prove this, it would indeed derail the very foundation of logic and result in the principle of explosion, which was referenced in a previous comic.

Since most of the content of computer science textbooks is fundamentally based on logic, Megan's proof

obviously spells doom for Dr. Knuth's, as each instance of logic can now be considered an error. After Megan's friend confirms the validity of her proof, Megan writes a letter to Dr. Knuth to collect her money for the 1,317,408 errors in *The Art of Computer Programming* at \$2.56 each. According to the amount Megan demands as a reward, she apparently considers this textbook to have an average of more than 400 instances of logic per page (if she has the latest edition of each volume).

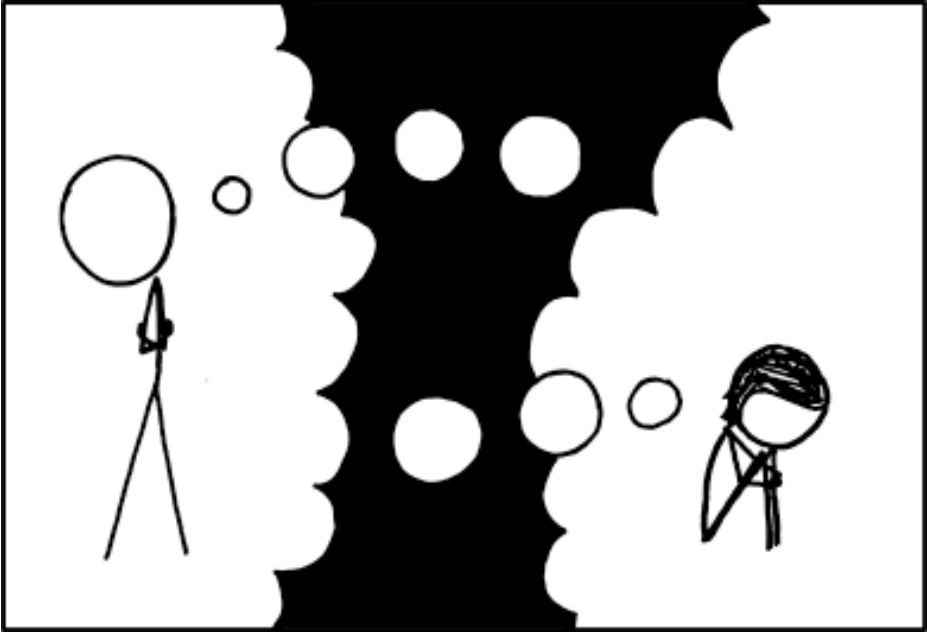
The title text is the reply from Dr. Knuth, in which he uses Megan's logic-disproving proof against her by claiming — with no logical explanation — that the amount of money she is in fact due as a reward is only 98 cents. In logic, from a contradiction (such as " $P \text{ } \neg P$ ") can be inferred any statement, including that $\$3,372,564.48 = \0.98 . He does this presumably to a) get out of paying her over three million dollars, b) demonstrate his contempt for or disbelief in her proof, and/or c) to show her, rather passive-aggressively, that she herself is not exempt from any ill effects resulting from her proof. If logic is proved to be false, then all mathematics are proved false and $3,372,564.48 = 0.98$. Dr. Knuth could have also given her nothing, as 0 would equal 0.98 which would equal 3,372,564.48.

The title of the comic, "Applied Math," is potentially a multi-meaning pun. Applied mathematics, as a field, refers to "mathematical methods that are typically used in science, engineering, business, and industry," as opposed to pure mathematics which focuses on abstract concepts. Megan has applied (apparently 'pure') mathematics to a

more materialistic real-world aim. That aim being to apply for a huge reward via this proof of dubious validity.

#817: Mutual

November 10, 2010



A universe that needed someone to observe it in order to collapse it into existence would be a pretty sorry universe indeed.

Explanation

The comic depicts Cueball and Megan simultaneously thinking about each other thinking about each other thinking about each other etc etc. this is one of the many comics that feature meta things. It may be a deliberate prelude to the next comic.

The title text refers to the aspect of Quantum Mechanics where a system can exist in more than one state until it is observed. An observation is required in order to "collapse" the system into a particular state; the thought experiment of Schrödinger's cat is a popular way of explaining this concept. The title text proposes that, if a universe needed to be observed to exist, as with a quantum state, it would be a pretty sorry universe indeed, as who would exist to observe it if it needed to be observed in the first place?

#818: Illness

November 12, 2010

HEY, EVERYONE—

AS I MENTIONED ON THE BLOG, I'M GOING THROUGH A ROUGH TIME RIGHT NOW. I'M DEALING WITH A SERIOUS FAMILY ILLNESS AND IT'S BECOME PRETTY OVERWHELMING.

WE'RE STILL GETTING A HANDLE ON EVERYTHING, AND I APPRECIATE YOUR PATIENCE WHILE WE FIGURE IT ALL OUT.

THANK YOU TO EVERYONE WHO WROTE IN WITH KIND WISHES AND WORDS OF SUPPORT. THEY'VE BEEN PASSED ON AND MEANT A LOT.

I LIKE DRAWING, AND MIGHT FIND TIME FOR IT IN THE COMING WEEKS, BUT I'M NOT GOING TO PUSH MYSELF TO STICK TO A SCHEDULE.

HOWEVER, BETWEEN MY STACKS OF NOTEBOOKS, SCANNER, AND SUPPORTIVE SYSADMIN, I SHOULD AT LEAST HAVE SOMETHING INTERESTING TO SHARE WITH YOU IN THIS SPACE EACH M/W/F.



<3 If there's anything you can do, I'll let you know. For the moment, any simple distracting online games sent to sick@xkcd.com will not go unappreciated [EDIT: Holy crap 2,700 games before noon. I love you guys; thank you. They

will be passed along and played by us all.]

Explanation

This is the first comic about Randall's fiancée's (now wife) cancer.

It is self-explanatory, although vague on specifics.

More details and related comics are on the [Category:Cancer](#) page.

In the comic Randall mentions that he might not be able to (or interested in) sticking to the normal schedule. But he did manage to do that anyway. However, this comic was posted on a Friday, and the next week there were the 5 minute comics, and already the week after the next, xkcd was overtaken by guests during the Guest Week. Maybe this was his online comic colleagues who gave him a helping hand?

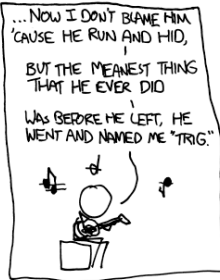
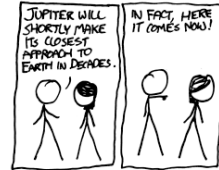
The title text asks for readers to send him distracting games to play, then was edited to show his appreciation for the number of them sent in.

#819: Five-Minute Comics: Part 1

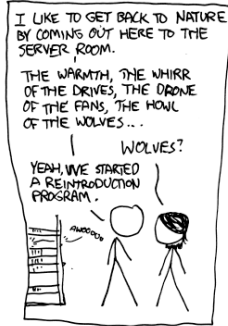
November 15, 2010

Because of a family illness, instead of regular comics, this week I'll be sharing some strips that I drew as part of a game I played with friends. Each comic had to be written and drawn in five minutes.

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-- Randall
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WHY DID I DRAW THIS?



HOITNESS RATINGS:



The wolves thin the **RAID** arrays, removing the slowest and weakest disks to keep the average seek speed high.

Explanation

This is the first of three "five-minute comics" Randall posted during a week in November 2010. The introduction to the comic explains everything you need to know about the circumstances behind it.

Randall obviously made more than three of these five minutes comics, and one of them was published later, for a short period of time by a mistake, but an android xkcd browser picked it up while it was on-line and saved it. Since then it has been added to explain xkcd. So here is a complete list of all four comics in the entire Five-minute comics series:

- 819: Five-Minute Comics: Part 1
- 820: Five-Minute Comics: Part 2
- 821: Five-Minute Comics: Part 3
- Five-Minute Comics: Part 4

Here is a list with explanations for each of the small comics:

The title text refers to the wolves thinning the RAID array. A RAID array is a way of spreading data redundantly across multiple hard drives, such that 100% of the data is still recoverable if some number of drives go down. This number can be set arbitrarily, as long as you have at least one more disk than the number you want, but it reduces your total storage space accordingly. The seek speed of a drive is how fast it can find a specific

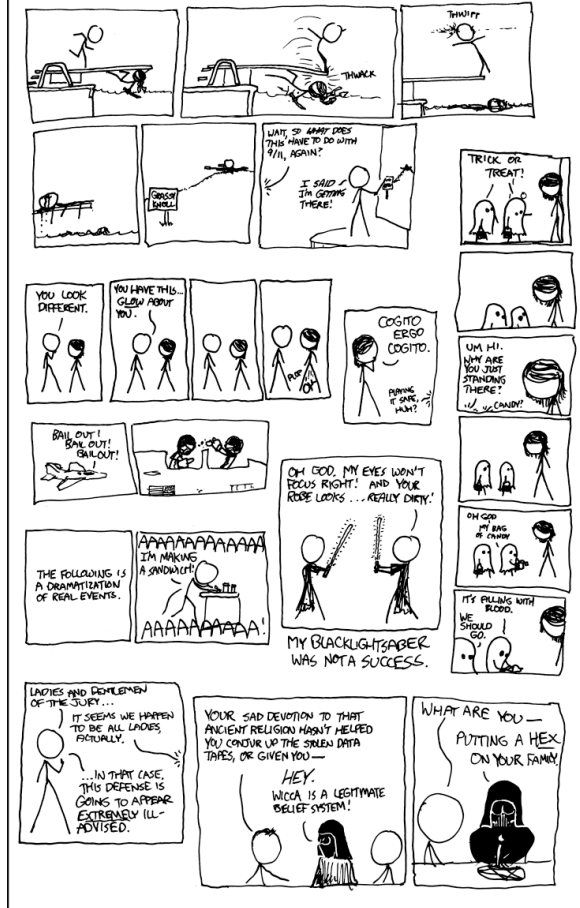
point of data on its platter; thus, the wolves are essentially killing the slowest drives, implementing a kind of natural selection to "evolve" the drives to be faster. "Thinning the RAID array" is a play on words. In the ecological sense, it refers to eliminating some members of the population to allow the remaining ones to thrive more successfully. In the datacenter sense, "thin provisioning" refers to the practice of marking an intent to use disk storage for a specific purpose but allowing it to be used for something else until actually needed (as opposed to "thick provisioning" which immediately reserves the storage space, even if unused).

#820: Five-Minute Comics: Part 2

November 17, 2010

Because of a family illness, instead of regular comics, this week I'll be sharing some strips that I drew as part of a game I played with friends. Each comic had to be written and drawn in five minutes.

-- Randall



Dear Wiccan readers: I understand modern Wiccans are not usually all about the curses and hexes. But Darth Vader was recently converted from Episcopalianism and he's still figuring it all out.

Explanation

This is the second of three "five-minute comics" Randall posted during a week in November 2010. The introduction to the comic explains everything you need to know about the circumstances behind it.

Randall obviously made more than three of these five minutes comics, and one of them was published later, for a short period of time by a mistake, but an android xkcd browser picked it up while it was on-line and saved it. Since then it has been added to explain xkcd. So here is a complete list of all four comics in the entire Five-minute comics series:

- 819: Five-Minute Comics: Part 1
- 820: Five-Minute Comics: Part 2
- 821: Five-Minute Comics: Part 3
- Five-Minute Comics: Part 4

Here is a list with explanations for each of the small comics:

The title text notes that modern Wiccans don't really practice the whole "putting hexes on people" thing, which is true. Episcopalianism probably refers to the Episcopal Church of the United States, which was founded during the American Revolution to replace the Church of England in the colonies.

#821: Five-Minute Comics: Part 3

November 19, 2010

Because of a family illness, instead of regular comics, this week I'll be sharing some strips that I drew as part of a game I played with friends. Each comic had to be written and drawn in five minutes.

-- Randall



Resulting in The Little Rock 9x + C.

Explanation

This is the third of three "five-minute comics" Randall posted during a week in November 2010. The introduction to the comic explains everything you need to know about the circumstances behind it.

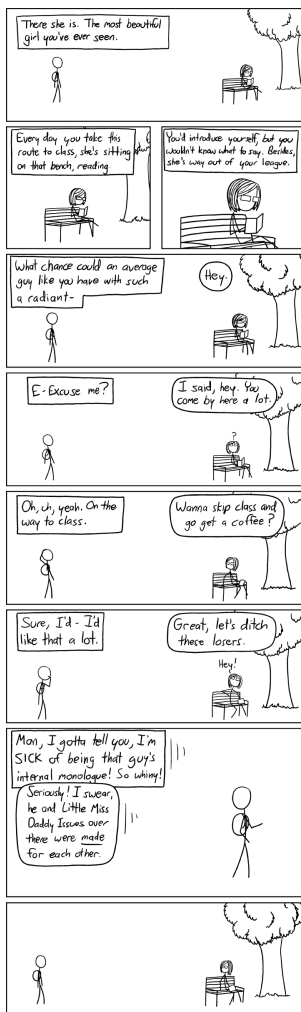
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- 819: Five-Minute Comics: Part 1
- 820: Five-Minute Comics: Part 2
- 821: Five-Minute Comics: Part 3
- Five-Minute Comics: Part 4

Here is a list with explanations for each of the small comics:

#822: Guest Week: Jeph Jacques (Questionable Content)

November 22, 2010



Guest comic by Jeph Jacques of Questionable Content, whose internal monologue hasn't been speaking to him for the past three years.

Explanation

The comic starts with Cueball's internal dialogue telling him what he's been thinking for some time now — that the girl he's looking at is so beautiful she seems unapproachable, and "what could she ever see in a guy like you", and typical fears that a guy has that prevents him from talking to a pretty girl.

Only to be interrupted by the girl's internal monologue, who introduces herself to Cueball's internal monologue and asks if he'd like to get a cup of coffee. As the internal monologues pair off and leave, they criticize the people whom they've been serving for so long, saying that they're made for one another, if only one of them would have the guts to start talking to the other.

Guest Week was a series of five comics written by five other comic authors. They were released over five consecutive days (Monday-Friday); not over the usual Monday/Wednesday/Friday schedule.

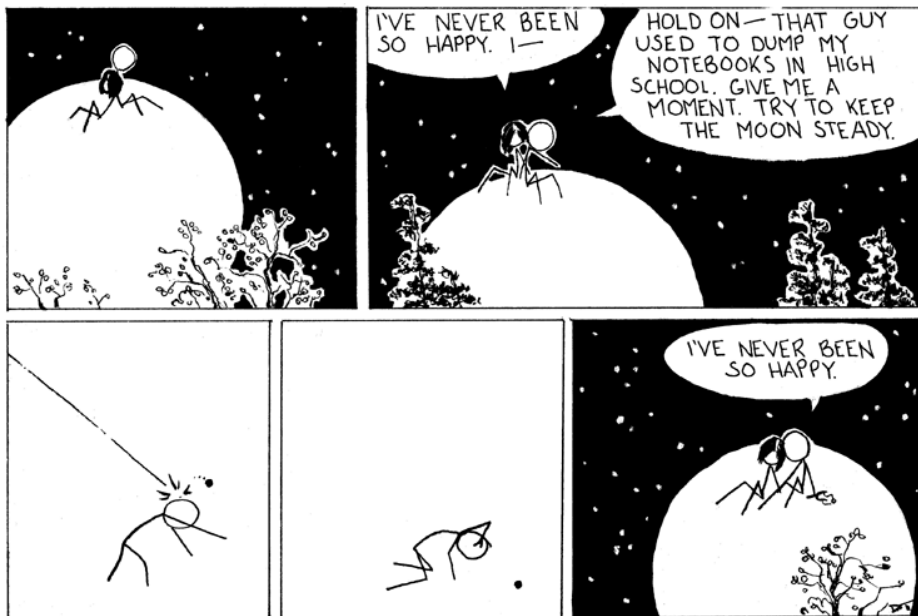
The five comics are:

- 822: Guest Week: Jeph Jacques (Questionable Content)
- 823: Guest Week: David Troupes (Buttercup Festival)
- 824: Guest Week: Bill Amend (FoxTrot)
- 825: Guest Week: Jeffrey Rowland (Overcompensating)

- 826: Guest Week: Zach Weiner (SMBC)

#823: Guest Week: David Troupes (Buttercup Festival)

November 23, 2010



Guest comic by David Troupes of Buttercup Festival, who is living in that lovely tree outside your window.

Explanation

This comic is a commentary on relationships. Megan is perfectly happy sitting on the moon without a spacesuit (which is impossible)[citation needed] with Cueball, the person she loves. Cueball, however, has his experience ruined when he notices a former bully of his passing by below. After hitting the bully with a rock that he shoots from the moon with his slingshot, he can share in Megan's happiness. (This is practically impossible as well. To start, the rock would most likely fall back down unless Cueball could throw it at escape velocity, but the precision required for such a throw would be extreme, and he would need to account for the movement of the Earth and Moon, as well as the Earth's rotation. Even if accounting for all of that, it would very likely disintegrate in Earth's atmosphere.)

David Troupes is the author of the webcomic Buttercup Festival.

Guest Week was a series of five comics written by five other comic authors. They were released over five consecutive days (Monday-Friday); not over the usual Monday/Wednesday/Friday schedule.

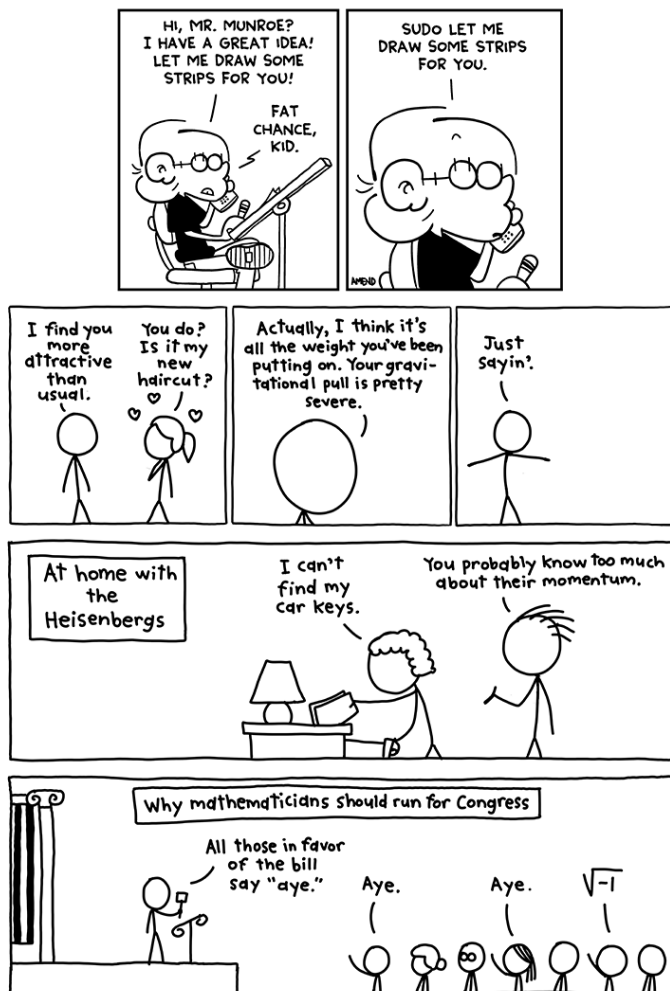
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- 822: Guest Week: Jeph Jacques (Questionable Content)
- 823: Guest Week: David Troupes (Buttercup Festival)

- 824: Guest Week: Bill Amend (FoxTrot)
- 825: Guest Week: Jeffrey Rowland
(Overcompensating)
- 826: Guest Week: Zach Weiner (SMBC)

#824: Guest Week: Bill Amend (FoxTrot)

November 24, 2010



Guest comic by Bill Amend of FoxTrot, an inspiration to all us nerdy-physics-majors-turned-cartoonists, of which there are an oddly large number.

Explanation

Bill Amend, author of the newspaper comic FoxTrot, draws for Randall in this special 'Guest Week' edition of xkcd. In the first two panels, we see Jason Fox, a geeky 10-year-old from Amend's strip. Jason asks to draw comics for Randall. When Randall refuses, he uses the `sudo` command, used in Unix systems to perform an action as an administrator/super user. This forces Randall to agree. This is a reference to the very popular comic 149: Sandwich, which has now become a geek culture catch-phrase.

It is a recurring theme in FoxTrot for Jason to offer to make substitute comics for artists, said comics usually involving mocking his sister Paige, and it is possible that Ponytail is representing her. This would be the first time that someone accepted his offers to make comics.

In the first comic, Cueball is making a pun on the word attractive. In the first context it means a person is "good looking" or "beautiful" which the female character attributes to her hair. In Cueball's context, he means that he is feeling an increased gravitational pull from the woman, due to her increase in mass (see Gravitation). This setup is also very typical of the Jason Fox character, who, ostensibly ten, is supposed to be too young to like girls. The female character's hair is done up in a ponytail similar to how Paige usually keeps hers, so this comic strip may also be a joke at Paige's expense.

In 1927 Werner Heisenberg postulated his eponymous Heisenberg Uncertainty Principle, which roughly states that in quantum mechanics one cannot know both the position and momentum of a particle. The joke is that (presumably) Elisabeth Heisenberg does not know the position of her keys, because she knows too much about their momentum. (This is also the subject of 1473: Location Sharing.)

In many parliamentary and congressional halls it is customary, when calling an issue to vote to have the people who want the issue at hand to be passed to say out loud that they agree. The customary response to this is to say "aye." The dissenters are then asked. Their response would be "nay" or "no". Then the volume (by rough decibels) of the assenters and dissenters are weighed. If it is close, a more formal vote may be called. "Aye" is pronounced the same way as the letter "i" and "i" is the mathematical value of the square root of negative one, which can be used to represent an imaginary number.

The title text of this comic draws attention to the fact that there are a number of notable people who have become famous as cartoonists, but also hold degrees in physics or have a strong interest in physics. This might seem unusual, because the average person might see physics and art as incompatible, and this is why Randall writes "an oddly large number." These people include:

- Randall Munroe, the writer of xkcd, has a degree in physics from Christopher Newport University.

- Bill Amend, the creator of *Foxtrot*, majored in physics at Amherst College.
- Zach Weinersmith, who writes the webcomic *Saturday Morning Breakfast Cereal*, majored in physics at San Jose State University.
- Henry Reich is the creator of the web video series *MinutePhysics*, and studied physics and mathematics at Grinnell College.
- Paul G. Hewitt is a physicist and author of physics textbooks. His textbooks contain a number of cartoons, drawn by Hewitt himself, to help illustrate physics concepts.
- Arryn Diaz writes the webcomic *Dresden Codak*, and majored in physics (among several other things) before dropping out. Her comics frequently reference ideas and experiments in physics.
- Larry Gonick is a cartoonist who has published a number of educational comic books, including *The Cartoon Guide to Physics*.
- Bud Grace, the creator of the comic *Piranha Club* (previously known as *Ernie*) holds a PhD in nuclear physics. He has been making the comic since 1988.
- Darren 'Gav' Bleuel, the creator of *Nukees*, is himself a nuclear engineer.

Guest Week was a series of five comics written by five other comic authors. They were released over five consecutive days (Monday-Friday); not over the usual Monday/Wednesday/Friday schedule.

The five comics are:

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- 823: Guest Week: David Troupes (Buttercup Festival)
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- 825: Guest Week: Jeffrey Rowland (Overcompensating)
- 826: Guest Week: Zach Weiner (SMBC)

#825: Guest Week: Jeffrey Rowland (Overcompensating)

November 25, 2010



Guest comic by Jeffrey Rowland of Overcompensating/Wigu. Jeffrey is famous as the picture on the Wikipedia article on 'Necrosis'.

Explanation

Randall himself (looking like Black Hat) is talking to Jeffrey Rowland (sitting with a drink), who writes the popular webcomics *Overcompensating* and *Wigu*. That it is supposed to be these two real people is clear from the official transcript on *xkcd*.

This may be a reference to Scott Adams' *God's Debris*, in which a delivery guy has a long conversation about the nature of the universe with an old man. While often dealing with complex questions, the old man in the story presents arguments in a very straightforward way. Some have called some of the arguments in the book very clever and original, albeit overly simplistic. This comic could be a parody on that style of philosophy. The ridiculous theory of Jeffrey's about the correlation between Dark Matter and consciousness is perhaps a reference to *Dust* in author Philip Pullman's *His Dark Materials* series, in which *Dust* is the associated particle with the Rusakov "consciousness" field, interpreted in our universe as Dark Matter. He then postulates that the reason we can't see dark matter is that we are conscious ourselves, alluding to the urban legend that, much like how a watched pot never boils, the mailman will never deliver if you are watching. He then moves on to the subject of ghosts, perpetuating the idea of how far-flung and implausible his "theories" are.

Traditionally, turkey is the main dish of the U.S. Thanksgiving holiday. Thus, the theory mentioned in

the last panel is that turkeys started the holiday in order to drive themselves to extinction. This is a reference to the Voluntary Human Extinction Movement (which merely advocated for people not reproducing. The "Turkey Voluntary Extinction Movement" took this to a much higher level by promoting the mass slaughter of turkeys.)

The title text is completely true: After a brown recluse spider bit him, Rowland started experiencing cell death in his leg. Although the wound itself is benign, it still is featured in Wikipedia articles (such as *Loxoscelism*). This is the picture of the leg and this is the famous picture in the *Necrosis* article.

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The five comics are:

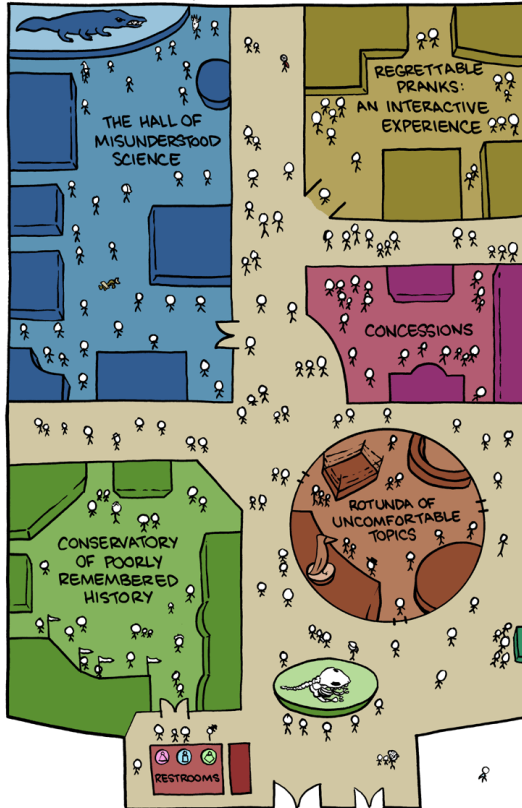
- 822: Guest Week: Jeph Jacques (*Questionable Content*)
- 823: Guest Week: David Troupes (*Buttercup Festival*)
- 824: Guest Week: Bill Amend (*FoxTrot*)
- 825: Guest Week: Jeffrey Rowland (*Overcompensating*)
- 826: Guest Week: Zach Weiner (*SMBC*)

#826: Guest Week: Zach Weiner (SMBC)

November 26, 2010

IN THE SPIRIT OF XKCD
I PRESENT A PROPOSAL
FOR A NEW SMITHSONIAN MUSEUM:
THE SMITHSONIAN MUSEUM OF DAD-TROLLING
AN ENTIRE BUILDING DEDICATED TO DECEIVING
CHILDREN FOR AMUSEMENT

(CLICK TO VIEW EXHIBITS/)



Guest comic by Zach Weiner of Saturday Morning Breakfast Cereal. When I was stressed out, Zach gave me a talk that was really encouraging and somehow involved nanobots.

Explanation

This comic is drawn by a guest webcomic artist, Zach Weiner (now Weinersmith), following the theme of "Guest Week". Zach is the author of the webcomic Saturday Morning Breakfast Cereal. The original comic is interactive. It will show images of the exhibits (see below) by clicking on them.

The entire comic is a hypothetical "Smithsonian Museum of Dad-Trolling, an entire building dedicated to deceiving children for amusement." It is a common occurrence that curious children will ask simple questions about science to their parents, such as, "Daddy, why is the sky blue?" and a parent could respond, "Well Susie, the sky is blue to match your dress."

Guest Week was a series of five comics written by five other comic authors. They were released over five consecutive days (Monday-Friday); not over the usual Monday/Wednesday/Friday schedule.

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- 826: Guest Week: Zach Weiner (SMBC)

Hall of Misunderstood Science[edit]

Each exhibit is a display set up to reinforce the false, sarcastic, or exaggerated answers to typical questions that children may ask their parents about scientific topics. The answers given involve just enough information that the child may be satisfied with the answer and repeat it to others while maintaining the irony for adults that the answers are obviously misleading or false. These explanations may be given because the parent does not know how to explain the topic.

- In this exhibit the marquee claims that basilisks exist, and that they live under your bed. The basilisk is a mythological reptilian monster that was described as having the ability to kill other living things with its gaze. This story might be believed by children because children often imagine that a monster or a dangerous creature is hiding under the bed at night, and verifying that the basilisk is under the bed and might kill the child would likely terrify the child.
- In this exhibit the marquee claims that "In my day" molecules did not exist, and everything was just atoms. Molecules are chains of atoms, and therefore more complex than atoms. This story might be believed by children because old people often tell unbelievable and questionably credible "In my day" stories about how different, or in this case less complicated, things when they were younger. This story may sound no less credible than these stories to a child. Like most "In my day" stories there is at least a grain of truth. The word atom has changed its meaning over time; at one time all discovered molecules were called atoms, as when they were modified their properties

change. Also, according to the Big Bang theory, there was a period billions of years ago when the universe contained no molecules, yet still contained atoms.

- In this exhibit the marquee claims that magnets are only attracted to each other when they are teenagers. This is an inside joke that the child is not in on about how there is a loss of sexual desire in adults. This story might be believed because magnets are seen as mysterious and possibly magical by children.
- In this exhibit the plaque on the statue of Jesus claims that snow is composed of Jesus' dandruff. This story might be believed because some children take the expression that rain is "God's tears", and this would be a logical extension.
- In this exhibit the marquee claims that the reason that there are only four components of DNA is because there were only four letters back then. The following letters describe the nucleotides that make up DNA chains: "G" guanine, "A" adenine, "T" thymine, and "C" cytosine. This story might be believed by children as DNA can be thought of as an instruction set to build life. Instructions contain words, and therefore the letters G, A, T, and C can be thought of as the letters that the words in the instructions are made from.
- In this exhibit the marquee claims that you are more vulnerable to the boogie man when you are sleeping. "The Boogie Man" is a common legend used to scare young kids; he typically hides in closets and underneath beds, and attacks sleeping children. This story might be believed by children as some believe in the boogie man.
- In this exhibit the marquee claims that water increases its size to frighten predators. Ice is less dense than liquid water. This is an

unusual property as most materials are more dense in solid form. This might be believed by a child because many animals appear to increase their size to frighten away other threatening animals. A rhinoceros, although not traditionally a predator, would be a predator of water.

- In this exhibit the marquee claims that anti-matter is composed of half ant and half matter. The prefix anti- means "the opposite of", but also can sound like ant-y. The suffix -y would make anty a neologism meaning "having the quality of or involving ants". Children might believe that matter involving ants could in fact be composed of both ants and matter. Antimatter is also referenced in 683: Science Montage, 1621: Fixion and 1731: Wrong as well as being the subject of the what if? Antimatter. It was also mentioned in another what if?: Lake Tea.

Regrettable Pranks: An Interactive Experience[edit]

This section holds falsehoods that a dad might use to frighten his children. Fear is often used to discourage children from disobeying their parents. It is an interactive experience, so visitors can try something for themselves, then learn the frightening fact it indicates.

- In this exhibit the sign claims that helium makes your voice higher because you are about to explode. Helium makes your voice high-pitched, because sound travels faster in helium than in air (79% nitrogen and 21% oxygen), and it does not explode because it is a noble gas; although it could rupture containers in accordance with the combined gas law, which governs the relationship between pressure, temperature and volume: i.e. if a balloon is over-inflated or exposed to heat, it will burst. This story might be used by parents to discourage children from

inhaling helium. This story might regrettably convince a child that they are dying after they inhale helium. On the other hand, it can be dangerous to inhale helium from a gas container if the pressure is too high. So maybe better scared than dead.

- In this exhibit the sign claims that if your middle finger is longer than all the others, you are an alien half-breed. For almost all people the middle finger is longer than all the others. This story might be used by parents to tease their children. This story might regrettably convince a child that one of their parents is an alien, and therefore not to be trusted. Another possibility is that everyone is an alien half-breed, and therefore, their progeny are also alien half-breeds.
- In this exhibit the sign claims that one of the cups of Jello had a rabbit brain instead of a cherry. Cherries are a common ingredient in gelatin based deserts. One cup is missing and in the hands of the child, possibly eaten. This story might be used by parents to tease their children, or discourage them from eating more dessert. This story might regrettably convince a child that they ate the brain of a small cute fluffy animal.
- In this exhibit the sign claims that monsters will eat you if you do not make your bed. In some stories monsters specifically prey on children. This story might be used by parents to encourage children to make their beds. This story might regrettably convince a child that there are monsters under their beds and frighten them so they can not sleep.

Concessions[edit]

This area holds concession stands, which sell food. There are misleading names on each stand. The pop-outs in this section are based on jokes parents tell their children to frighten them about food.

- In this exhibit the marquee announces the name of the concession stand as KFP. The parent claims that the "P" stands for phoenix, and the operator adds "also ponies". KFP is a parody of Kentucky Fried Chicken (KFC), a popular fast food chain which specializes in fried chicken. A phoenix is a mythical bird that throws it self into a fire and later rises from the ashes. This story might be believed by children because phoenixes are birds and a fried one may look similar to a chicken.
- In this exhibit the marquee announces that the concession stand sells ground beef and further explains that ground beef is beef that is found on the ground. The word "ground" here refers to the floor or dirt, but can also be the past tense of the word "grind". This story might be believed by children because the words are spelled and pronounced the same.
- In this exhibit the marquee announces that the concession stand sells ice cream and claims that ice cream is really spelled eyes cream, and always composed of eyeballs. This story might be believed by children because the words "eyes cream" sounds similar to "ice cream".

Conservatory of Poorly Remembered History[edit]

Each exhibit is a display set up to reinforce the false, sarcastic, or exaggerated answers to typical questions that children may ask their parents about history. The answers given involve just enough information that the child may be satisfied with the answer and repeat it to others while maintaining the irony for adults that the answers are obviously misleading or false. These explanations may be given because the parent does not know how to explain the topic.

- In this exhibit the marquee claims that Genghis Khan achieved

his victories by using dragons. Genghis Khan was a Mongolian conqueror who conquered almost all of Asia and much of Europe founding the Mongol Empire, and creating the largest continuous land empire in history. This story might be believed by children because some children associate magical and other fantastic elements with the past instead of fantasy.

- In this exhibit the marquee claims that the Crimean War was a war on crime. The Crimean War is an often forgotten Eastern European conflict between Russia and a European coalition (including France, which the comic also pretends doesn't exist) with aims to stop Russia's expansion. This story might be believed by children because adding an "a" to a people group sometimes is used to create a country name, making Crimea sounds similar to a nation of criminals. Also worth noting is that the criminal depicted in the mural appears to be the Hamburglar, a McDonald's mascot.
- In this exhibit the marquee claims that wizards were in control during The Renaissance. The Renaissance is a cultural movement in Europe that took place after the Dark Ages. This story might be believed by children because some children associate magical and other fantastic elements with the past instead of fantasy.
- In this exhibit the marquee claims that Star Wars is actual history. Star Wars is a fantastical science fiction movie. This story might be believed by children because the movie begins "a long time ago in a galaxy far away", and some children associate magical and other fantastic elements with the past instead of fantasy. The "veteran" presented here appears to be wearing a fake beard as part of his costume.
- In this exhibit the poster claims that France does not exist. The

adult in the comic continues to attempt to convince the children that France does not exist. This is supposed to be funny because the knowledge of France as a country is common. This may be parodying the global warming debate, a common theme in both XKCD and SMBC. It may also be a reference to the Bielefeld Conspiracy.

Rotunda of Uncomfortable Topics[edit]

Each exhibit is a display set up to explain uncomfortable topics that children may ask their parents about. The answers given so that the children do not ask further questions.

- In this exhibit the sign on the box covering up a couple in bed claims that naked wrestling is perfectly normal, but kids should never engage in it. "Naked wrestling" is a euphemism for sex. A parent may give this explanation if a child walks in on their parents having sex and they have to come up with an explanation on the spot, or they feel that the children are too young to know about sex.
- In this exhibit the sign over the stand claims your parents drink alcohol to prevent you from drinking it as alcohol is a poison. This is technically true, as alcohol is a toxin. A parent may give this explanation to a child who asks their parents why they drink alcohol if it is bad for you, and did not want to explain the pleasurable experience of alcohol because it might encourage children to drink.
- In this exhibit the banner claims that mommies have big tummies because storks like chubby girls. According to some childhood stories storks deliver babies. Also, there are men who prefer heavy women; these men are often called chubby chasers. A parent may give this explanation to a child who asks why, if a

stork delivers babies, their mother is changing while she is pregnant, and the parent continues to try to avoid the topic of sex.

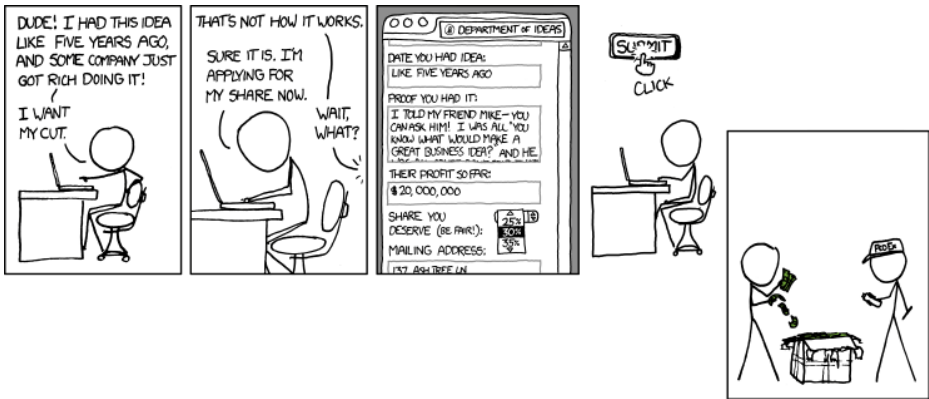
- In this exhibit the sign claims that grandma did not die, but is going back to Saturn. The choice of Saturn as grandma's destination is appropriate because the god Saturn was associated with aging, as in "Saturn, the Bringer of Old Age" from The Planets. Some parents tell their children that their loved ones have gone away instead of telling them the truth, that their loved ones are dead. Going to Saturn "for revenge" is added for comic value. A parent may give this explanation to avoid causing their child pain.

Miscellaneous[edit]

- In this exhibit the marquee claims that dinosaurs are made of bones only. The fossil record includes the imprints of the other tissues of dinosaurs including skin, nails, teeth, and feathers. This story might be believed by children because the majority of all displays of dinosaurs in museums only include bones.
- The restrooms have 3 doors. Clicking reveals that there the two standard gendered restrooms found in the majority of public buildings, and another one for "Korgmen & Spangs" which does not correspond to any known human trait. This could be a reference to the Marvel alien species the Korg.
- In this exhibit the sign (which the children can not see) explains that the "Magic Eye poster" contains no hidden images. Magic Eye is a company that sells autostereograms in books. Autostereograms contain a "hidden" three-dimensional image that can only be seen by converging one's eyes towards a point other than upon the poster itself. This takes time and many people find it difficult or impossible to do.

#827: My Business Idea

November 29, 2010



We didn't believe you at first, but we asked like three people who were at that party. They not only corroborated your story, but even said you totally mentioned wanting to start a company someday. Sorry! If this isn't enough money, let us know.

Explanation

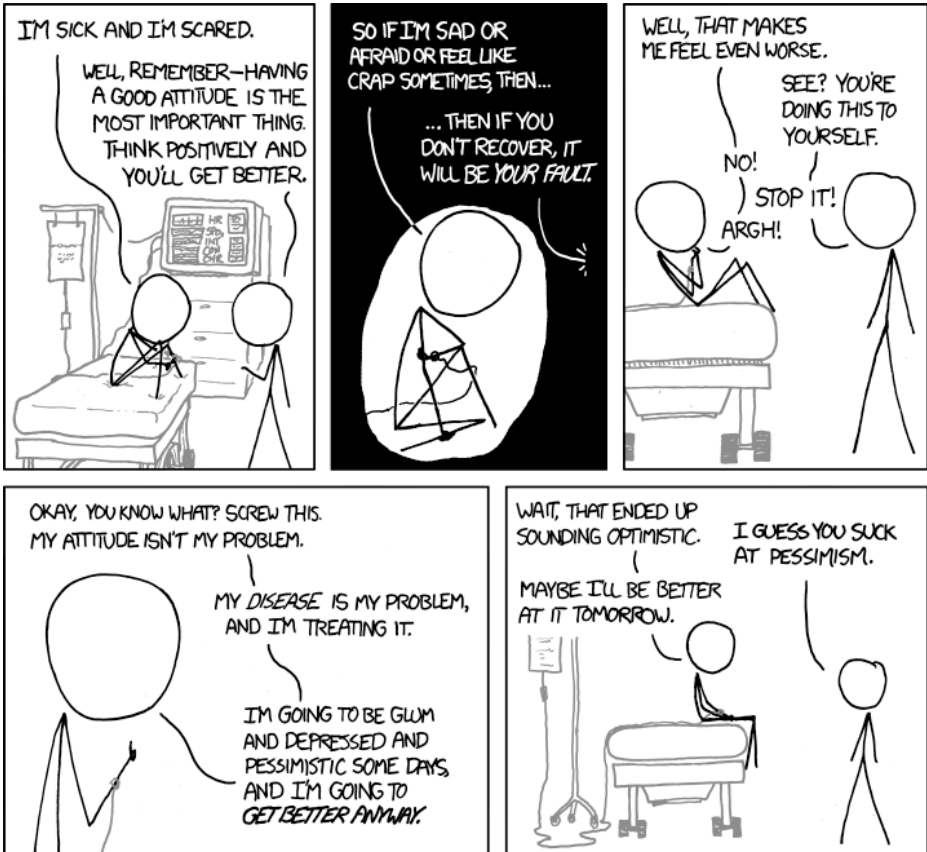
Many people have shared Cueball's experience of seeing someone else make a profit from an idea that they themselves had. This comic plays with the thought of what would happen if intellectual property thinking was taken to an extreme, and if companies or people were keener on "setting things right" than money.

In reality, having a great idea alone, of course, does not create a profitable business; there must generally be an enormous amount of effort put in to create a business from scratch, popularize it, and keep it standing. Having done none of this, Cueball would probably not deserve close to the "30% cut" he claims even if intellectual property did work the way it is presented here. Multiplying \$20,000,000 by 30% gives \$6,000,000, which would be a lot of cash for doing nothing but having an idea and telling it to someone. The delivery address is to an address on 'Ash Tree Lane', referencing the space-warping house on the same street from the mysterious 'House of Leaves' book.

The title text is an extension of this story, presumably coming from the company, comedically apologising for not knowing sooner about Cueball's idea, and revealing that they corroborated this claim with his friends at a party about this venture, even kindly offering him a larger share of their revenue.

#828: Positive Attitude

December 01, 2010



Having a positive attitude is almost tautologically good for your mental health, and extreme stress can hurt your immune system, but that doesn't mean you should feel like shit for feeling like shit.

Explanation

Cueball feels bad because he's sick, and his friend tells him to think positively because that will make him feel better. After thinking a bit Cueball notices that, following that reasoning, if he feels bad it is his fault for being so pessimistic. That makes him feel even worse as now he's not only sick, but also feels guilty of his own sickness.

In the fourth panel, he throws away all the previous reasoning and decides his mood is not the problem: the problem is that he's sick. Also, he decides that whatever he feels now he'll finally get better because he's treating his disease.

In the last panel Cueball notices his last comment was actually optimistic, so that makes him feel better. At this point, it should be expected that Cueball's friend would say "see? looking at things in an optimistic way actually helps". However, he puts optimism as something bad by using the phrase "you suck at pessimism". Cueball then tries to be optimistic at his "sucking" by thinking he'll "be better at pessimism tomorrow". Of course, being good at pessimism is something he should avoid, as it was his very problem in the first few panels.

The title text takes a serious turn, and acts as an advice for people feeling bad for being sick. The point is that sickness makes one feel bad enough by itself without having to feel guilty for feeling bad when one's sick.

In the first panel, Cueball is connected to a monitor and an IV (Intravenous therapy). In a real hospital this might be recording data, such as heart rate (HR) and peripheral oxygen saturation (SpO2) however in the comic, INT, CON and CHR are also recorded. These may be a reference to character stats in some role playing games. In the "Adventurer Conqueror King" system, INT=Intelligence. CON=Constitution and CHR=Charisma.

#829: Arsenic-Based Life

December 03, 2010



According to a new paper published in the journal *Science*, reporters are unable to thrive in an arsenic-rich environment.

Explanation

This comic is about the December 2010 announcement of the (since refuted) discovery of a strain of extremophile bacteria that incorporate arsenic instead of phosphorous into some of their biochemistry. The first three panels depict a group of scientists—including one shown with long, curly hair bound in a ponytail, identifiable from this hairstyle as Felisa Wolfe-Simon, the post-doctoral research associate who spearheaded the arsenic research (see 2421: Tower of Babel for another female scientist who is identifiable by her hairstyle)—preparing for their press conferences announcing the details of the discovery.

The trio are worried that the press conference about their discovery will be less exciting to the reporters, because the press are expecting news of life on Saturn's largest moon, Titan. The researchers decide to try and make the event more exciting, but they don't know how to throw a good party. As a result, they look up advice on the internet and decide to serve cocktails and hors d'œuvres to fit the theme of the event.

The final panel shows the result, where the reporters are either dead or dying. It is implied that in order to fit the theme the researchers have laced the food and drinks with arsenic.

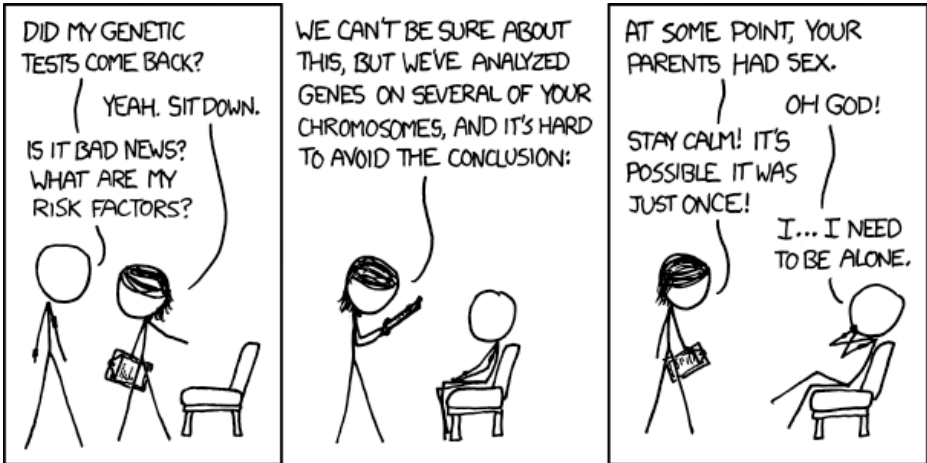
Arsenic is a chemical element which is known to be poisonous to humans and most other life forms. In 2010

NASA announced the discovery of bacteria GFAJ-1 (an abbreviation for "give Felisa a job") and claimed it to be able to sustain itself when starved of phosphorus, by substituting arsenic for a small percentage of its phosphorus. Most scientists did not believe this and it was disproven in 2012.

The comic draws its humor by picking on both scientists and reporters. It is a common theme in xkcd to show scientists who may be extremely clever within their field, but sometimes lack common sense and are inept at social situations. Reporters are often criticized for over sensationalizing discoveries and hunting for exciting stories.

#830: Genetic Analysis

December 06, 2010



There's still a chance you were conceived via IVF. But we've checked your mom's college yearbook photos, and whether or not she and your father had sex, it's clear that ... listen, I know this is hard for you.

Explanation

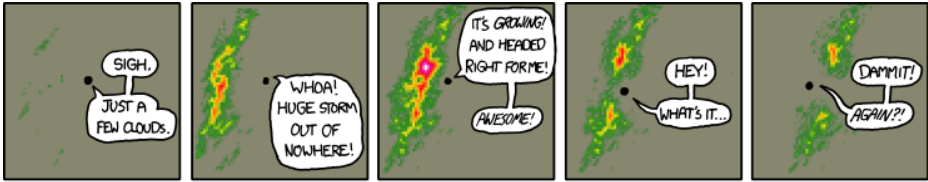
Genetic testing is a medical procedure where researchers analyze your DNA and family history to determine if you have elevated risk factors for diseases such as heart conditions and cancer. Here, the doctor appears to be delivering the results of Cueball's genetic test but instead tells him that his parents had sex at some point.

People generally don't like thinking about their parents having sex, but it obviously happened, since having sex is usually the precondition for having children, unless they were conceived through IVF, [citation needed] so this test result is completely unsurprising. If the doctor only came to this conclusion after analyzing genes on several of Cueball's chromosomes, this could have been done in order to verify that Cueball's DNA indeed resembles the DNA of his supposed parents i.e., that the people whom he has always viewed as his parents are indeed his genetic parents. However, the alternative might be even more disturbing.

The title text notes that he could be an in-vitro fertilization baby, which does not require the parents to directly have sex. However, it seems to suggest that Cueball's mother was very attractive in her college years (or that she was pregnant). Thus, Cueball's mother probably did have sex (regardless of whether or not it was with Cueball's father). This is a reference to the stereotype that college students engage in large amounts of sex.[citation needed]

#831: Weather Radar

December 08, 2010



WHEN THE FOLKS AT THE WEATHER OFFICES
SEE YOU REFRESHING THE RADAR TOO OFTEN,
THEY START TEASING YOU.

Ever notice how there aren't as many thunderstorms now as there were when you were a kid? Much like 'the shuffle on my MP3 player has a bias', this is occasionally true but universally believed. Brains are so interesting!

Explanation

A weather radar is a device which uses the reflection of radio waves from rain or snow to detect where there is rainfall. The information from the radar is then shown on a map. In this case green means light rain while red or white represent very heavy rain - possibly a thunderstorm. These maps can be quite beautiful and mesmerizing to look at. In this case the speaker (who is located where the black dot is) enjoys watching interesting, unexpected events on the radar and is surprised to see a massive, unexpected storm heading straight for him. A storm indeed appears but splits in half and passes either side of him. The reaction of the speaker shows that this has happened before.

The caption suggests that this happens when the people who run the radar notice you looking at the page enough they tease you by adding a fake storm coming towards you which then disappears just as it approaches the speaker.

The title text explores how our perceptions are often inaccurate - someone may think that there are fewer storms than when they were young or that certain songs come up more often on their MP3 player, even when they don't. There are lots of these types of biases in judgement.

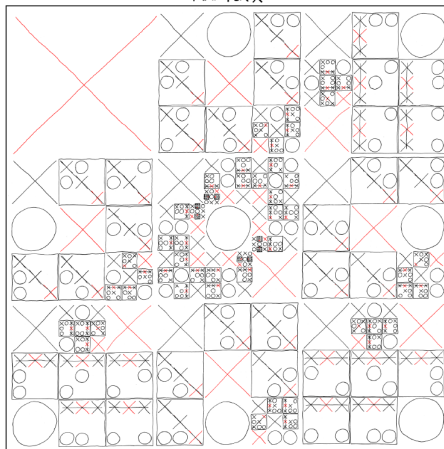
#832: Tic-Tac-Toe

December 10, 2010

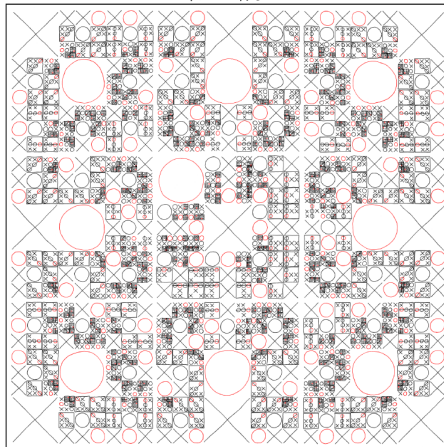
COMPLETE MAP OF OPTIMAL TIC-TAC-TOE MOVES

YOUR MOVE IS GIVEN BY THE POSITION OF THE LARGEST RED SYMBOL ON THE GRID. WHEN YOUR OPPONENT PICKS A MOVE, LOOK IN ON THE REGION OF THE GRID WHERE THEY WENT. REPEAT.

MAP FOR X:



MAP FOR O:



The only winning move is to play, perfectly, waiting for your opponent to make a mistake.

Explanation

In what follows we will use numpad notation for tic-tac-toe, i.e.:

Each map shows every possible combination of moves which will result in that side winning or tying. It assumes that X moves first, and its optimal move is X7. Any corner would do, so X1, X3 and X9 are also optimal moves. The map for X has a big red X7 (650×650 pixels), and the 8 remaining grids have a smaller (210×210) black X7.

The map for O has more combinations, because in this case X is not assumed to be optimal. All 9 subgrids have one big (210×210) black X and one big red O.

Note that only optimal moves are shown. For example, you can't find a grid beginning with X2 in Map of X, because X2 is not an optimal move.

In map for O you can find a 660×660 grid beginning with X2. Since the optimal answer is O5, you won't find X2, O8, for example.

The largest red X in Map for X is X7. This means that O must go to cell 7 in Map for O. The largest red O in this subgrid is the center cell O5. Therefore X must magnify cell 5 in the map for X and look for a big red X, which is X3, i.e. in the cell (6, 4) in a 9×9 grid. This can be repeated until one of the players wins or there is a tie.

Download http://xkcd.com/832_large/ and edit it. Delete the upper part. Now you have a picture sized 2040×2150 pixels, with title MAP FOR O.

Assume X used the center cell, X5. You as O must magnify the center cell in the 3×3 map for O. Better still, select that cell and delete everything else. Now you have a picture sized 670×670 pixels, with a big red O7 and a big black X5. You must move O7 this time.

Assume X moves X9.

In your drawing program you select cell 9, which is 220×220 pixels. Look for the biggest red O, which is O1. You can see you blocked a winning move.

Now X, naively, plays X3

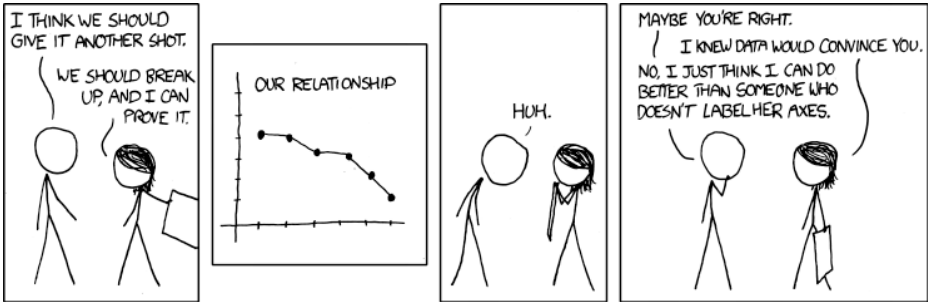
You select cell 3 in your drawing program, which is 73×73 pixels and looks like this

The O in cell 4 is red, which is your winning move.

The title text is a reference to the 1983 movie WarGames. In that movie, by playing Tic-Tac-Toe the AI realizes that some games cannot be won when all the players play flawlessly, and subsequently concludes that the only way to win at the nuclear warfare "game" is not to play.

#833: Convincing

December 13, 2010



And if you labeled your axes, I could tell you exactly how **MUCH** better.

Explanation

This comic is a typical xkcd compilation. Relationships, math, graphs and of course, the twist. At 523: Decline Cueball's fascination with graphs seems to have retaliated against him. Cueball wants to get back together with Megan, but she declines and shows him a graph showing why. She thinks that the downward trend of the graph will convince him that their relationship is also in decline. But, Cueball takes that as this is a woman who does not follow proper protocol, since she does not label the axes (plural for axis) on her graph. We do not even know the unit of measure on the graph, let alone what each axis corresponds to. For all we know, the horizontal axis could be labeled "Time" and the vertical axis could be labeled "Crappiness of Relationship" or "Unawesomeness of Relationship". In that case, a downward trend would be a positive thing.

In the twist, Cueball sees that he can do better than this woman and switches his position and decides he is going to break up with her.

Cueball has already broken up with people over graphs before (see 539: Boyfriend). Ironically, he or a different Cueball gave a similar graph with vaguely-labelled axes in 523: Decline.

The title text points out the irony that if the axes had been labelled, then Cueball would be able to use it to determine exactly how much better a relationship he

could get, since he could read how crappy the present one is. Yet he would lose the twist at the end, so that the graph data would have to convince him and not the lack of labels.

"Someone who doesn't label her axes" sounds like an inversion of "someone who labels her exes", which is an accusation sometimes levelled in break-up situations.

#834: Wikileaks

December 15, 2010



STUDENTS ARE CALLING PRESIDENT JOHNSON EN MASSE TO PROTEST THE BOMBING AND IT'S JAMMED THE WHITE HOUSE SWITCHBOARD. COULD THEY COLLAPSE OUR CRITICAL PHONE SYSTEMS? HAS THE FIRST TELEPHONE WAR BEGUN? STAY TUNED FOR MORE ON THIS DANGEROUS NEW TECHNOLOGY.

Explanation

This comic references WikiLeaks, a site to which classified data can be sent for publication, while nobody would know who leaked the data. Many people dislike WikiLeaks, but proponents claim that, since government is supposed to work for the people, all government information should be available to anyone who wants to see it. WikiLeaks' actions are illegal in most countries, and the people maintaining WikiLeaks stay anonymous, with the notable exception of Julian Assange, the spokesperson. Among the supporters of Wikileaks are the 4chan-based activism/hacker group Anonymous, who, for the week or so prior to this comic's release, used DDoS attacks to take down servers for companies that aided the governments of the world in taking down Wikileaks and its CEO, Julian Assange. Amazon, PayPal and MasterCard were all targets of Anonymous. The claim 'We are legion' is a reference to Mark chapter 5 in the Bible, in which Jesus throws out a group of demons that call themselves Legion, "for we are many."

The comic imagines an ironic scenario in which WikiLeaks, the organization Anonymous fought to protect, stays true to their mission of releasing secrets to the public, and publishes the personal information of Anonymous members. The joke in the comic notes a contradiction in Anonymous's position, relying on strict secrecy of its members' private information while supporting an anti-secrecy organization like WikiLeaks. This may be a reference to an incident in 2009 when

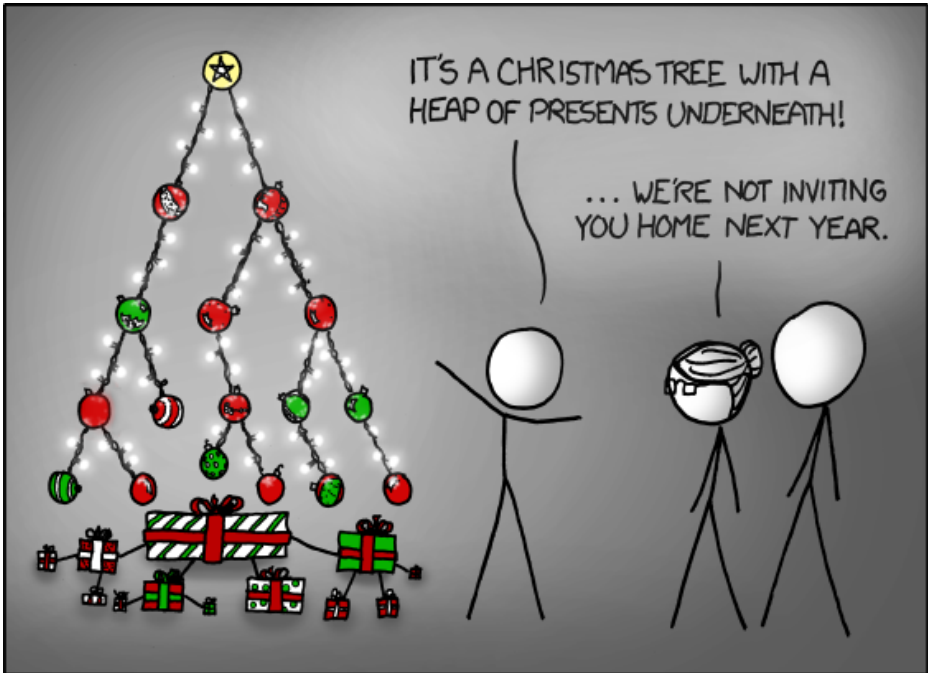
WikiLeaks published a leaked list of some of their anonymous donors, following their then-policy of complete impartiality regarding leaks.

In theory, Anonymous consists of everyone who takes steps to remain anonymous, not merely the hackers and criminals. In practice, Julian would merely have to post a list of Wikileaks contributors.

The title text appears to be a news wire from during the Vietnam War when Lyndon B. Johnson was President in the United States. The students were calling to protest the War, in what xkcd implicates as the first DDoS attack. A DDoS attack is a Distributed Denial of Service attack, one of Anonymous' favorite tactics, in which the attackers send vast quantities of traffic from many different points to take down a web server, or, in the case of the title text, a phone network. Taken as a whole, the title text satirizes news reports in which a DDoS attack is confused with an actual hack, as only in the latter does the attacker gain (partial) access to the system itself.

#835: Tree

December 17, 2010



Not only is that terrible in general, but you just **KNOW** Billy's going to open the root present first, and then everyone will have to wait while the heap is rebuilt.

Explanation

Cueball turns his family's living room Christmas tree into a cringingly-awful programming pun. His parents, Hairbun and a father-Cueball, are so unamused, he's not welcome back next year.

Trees are data structures in computer science, based on two simple rules:

- A tree starts at a single node, called its root.
- Each node in a tree has two or more spaces for its children, each of which may be empty or occupied by another node. Of course, that node may have its own children, and so forth. Each node except the root has exactly one parent. As a bit of trivia, a node with no children is called a "leaf node."

A binary tree is a tree where each node has spaces for exactly 2 children.

The "Christmas tree" is a basic representation of a binary tree - the star at the top is the root node, and the lights running down indicate the connections between parent and child. Contrary to what the terms "root" and "leaf" might imply, trees in computer science are typically represented upside-down, with the root on top and the leaves fanning out below. This gives the tree a similar profile to the conical pine trees typically used as Christmas trees.

The Christmas tree is constructed based on no apparent

rules, but the main power of data trees comes in organizing them according to specific rules. Because code that runs later can assume the data is organized in this specific way, it can use different algorithms that make things run faster. One way of doing this is with a heap. A heap is a special kind of tree (usually a binary tree, but in this case a quaternary tree), subject to one additional rule:

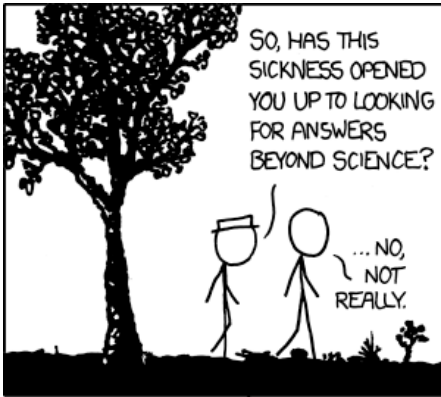
- For every node in the tree, everything beneath that node - both or all of its children, all of its children's children, all of their children, and so on - are "less than" the node itself.

"Less than" in this case can refer to any comparison that can be made between two nodes - in this case, it's based on the size of the presents. Of course, there's a cost to all this; the heap must first be placed in that order. Not only that, but if a node gets removed from the heap, the heap has to be "rebuilt" to put it back in the right order. This is referenced in the title text - if Billy opens the root present, several comparisons must be done to shift other presents in its place to preserve the heap rule.

In 1308: Christmas Lights a similar strange Christmas tree has been constructed using the electromagnetic spectrum, which evidently received a far better reception in-universe.

#836: Sickness

December 20, 2010



...NO,
NOT
REALLY.

WE'VE GROPED FOR COMFORT BEFORE THE SLINGS AND ARROWS OF FORTUNE FOR MILLENNIA, AND I BEGRUDGE NOBODY THEIR SOURCES OF SOLACE.

BUT SCIENCE PROVIDES ~~TOOLS~~.

\$100 BILLION A YEAR IN SCIENTIFIC STUDIES AND MEDICAL R&D HAS BOUGHT US SOME PRETTY DAMN POWERFUL SLINGS AND ARROWS OF OUR OWN.

THIS WORLD IS AMAZING, AND I'M GOING TO LIVE TO EXPERIENCE MORE OF IT THANKS TO PEOPLE WHO REFUSED TO GRACEFULLY ACCEPT THE INEFFABILITY OF REALITY.

I FIND MY COURAGE WHERE I CAN, BUT I TAKE MY WEAPONS FROM SCIENCE.

BECAUSE THEY WORK, BITCHES.

At least, with $p < 0.05$ confidence.

Explanation

This comic was published 2 months after Randall's then fiancée, now wife, was diagnosed with breast cancer (see Category:Cancer), which is likely what inspired this comic - even though Cueball sounds like he is the one afflicted by the sickness. The comic is thus about the existential questions that might arise from such a crisis. The moral could be interpreted as that you shouldn't begrudge your fellow human being, regardless of where they find comfort.

Also, any sentence is instantly funny if, at the end of it, you address your audience as "bitches". It may also be a reference to 54: Science.

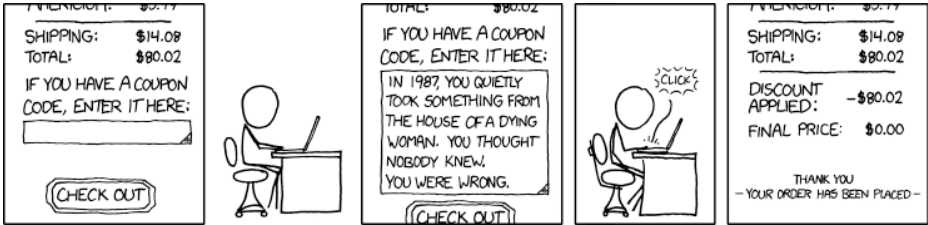
"Slings and arrows of fortune" is an allusion to the "To be, or not to be" soliloquy in William Shakespeare's Hamlet, Prince of Denmark. Hamlet asks himself whether it is "Nobler in the mind to suffer / The Slings and Arrows of outrageous Fortune" (to resign oneself to one's fate and endure what may come), or to "take Arms against a Sea of troubles, / and by opposing end them" (to commit suicide and end suffering); he ultimately concludes that we would rather face the dangers and pains we know on Earth than whatever unknown new ones may come in the afterlife. Cueball appears to agree with Hamlet, thanking "the people who refused to gracefully accept the ineffability of reality": Religion and spirituality can give him the moral courage to face his death, but he'd much prefer to not die in the first place,

and won't have to, thanks to medical and scientific innovation. (Actually he will have to eventually.[citation needed] Medical and scientific innovation simply delay the inevitable events of death and entropy.)

The title text is a pun based on Cueball's newfound confidence, asserting that his statement "because they work, bitches" has a 95% confidence interval.

#837: Coupon Code

December 22, 2010



This also guarantees he won't be one of the ones to get a bobcat.

Explanation

Some online stores allow you to enter a coupon code for a discount on one of their products. Coupon codes may be a single, simple word related to the product or seller or a complex sequence of characters.

In this comic, Cueball is buying something online, and he comes across the option to use a coupon code for a discount before checking out. Instead of entering a coupon code, which is often a random sequence of numbers and letters, he chooses to enter a long and detailed blackmail message in the normally short coupon code form, hoping that blackmail could scare the seller and serve the way a coupon code would. This works so well that, instead of just receiving a small discount on the items he bought, Cueball is discounted the full price of the product he's buying. It is uncertain if he still has to pay the shipping cost.

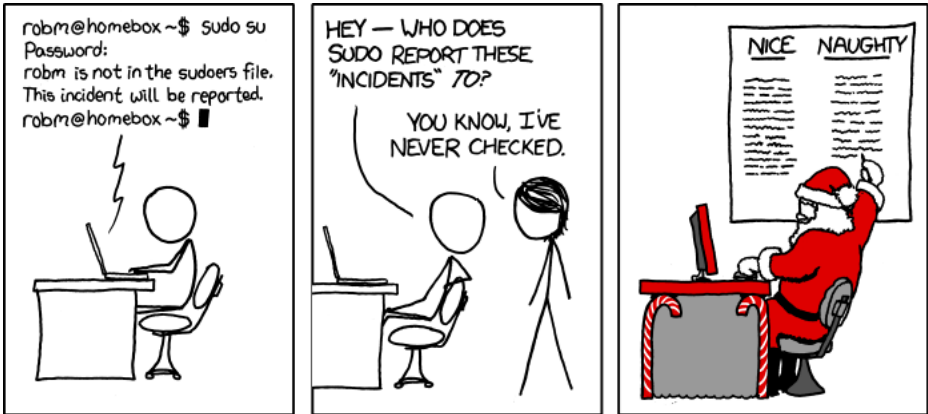
The humor comes from the fact that Cueball's intimidation works as if the online seller checking the coupon codes was an actual person, and not a computer, which is how coupon codes are checked. In addition, his blackmail message was far too detailed and specific that it could only be used on a certain person and would have virtually no chance of succeeding, unless he knows the seller so well that he even knows about crimes he did secretly.

The title text references 325: A-Minus-Minus; it has

become a running gag that bobcats are occasionally sent by mail by Black Hat in various comics. By blackmailing the seller, it is unlikely that the seller will want to antagonize Cueball by sending him something that may lead to his injury. This implies that the seller is Black Hat; while petty crime is usually not the first association, given his impressive track record of malice, it would also not be completely unimaginable. Should this be true, this comic would also mark one of the few instances in which Black Hat does not get the last laugh.

#838: Incident

December 24, 2010



He sees you when you're sleeping, he knows when you're awake, he's copied on `/var/spool/mail/root`, so be good for goodness' sake.

Explanation

This comic was posted on Christmas Eve. While Christmas is principally a Christian holiday, there are many traditions around it, among them a tradition that on Christmas Eve Santa Claus will make his round delivering gifts to good children. Rob (identified by his username, robm) sits behind a UNIX computer and tried to change his user account from his normal access to the access of a super user by using the command "sudo su". Sudo is a famous phrase in xkcd lore, made famous by comic 149: Sandwich. Before allowing administrator access (as root user), it asks for a password. The field is blank because, in most UNIX systems, the characters of the password are not shown. Even though the password is correct, Rob's account is not in the list of accounts that can use sudo (the sudoers file). The error message says that the incident "will be reported" (usually to the system administrator, so they can see if someone is making repeated attempts at accessing administrator privileges).

In the comic, however, sudo and the system report the incidents to Santa Claus, who, in Christmas lore, makes a list of who is naughty and who is nice. If you are nice then you get presents, while if you are naughty, you get a lump of coal. When sudo reports to Santa that Rob's account is not authorized, he puts Rob on the naughty list. The message "... is not in the sudoers file. This incident will be reported." is a real message that the sudo program used to output in this situation. It was changed in 2022 to "This incident has been reported to the

administrator", citing this comic: .

In the title text, which is a parody of the famous Christmas song, "Santa Claus Is Coming To Town", /var/spool/mail/root is the root (superuser) mailbox on a Linux system, where the incident described in the comic would commonly be reported to.

#839: Explorers

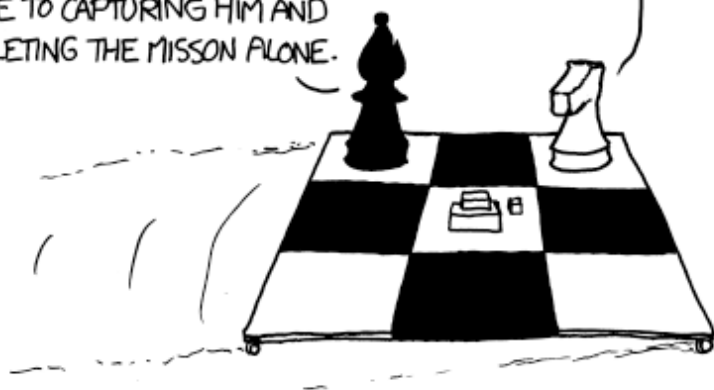
December 27, 2010

MISSION CONTROL, COME IN. THIS IS Ba3 ON THE CAPSULE CALLING Ke5 ON THE HOME BOARD. WE'RE ON TRACK AND APPROACHING THE COAST OF CATAN. OUR ETA IS—

CONTROL, THIS IS Nc3. BISHOP PUT ALL OUR FOOD IN THE CENTER SO I CAN'T GET IT. I DEMAND—

CONTROL, KNIGHT WILL GET HIS FOOD BACK WHEN HE STOPS HOPPING AROUND BRAGGING ABOUT HOW COMFY THE BLACK SQUARES ARE.

I SWEAR TO GOD, I'M THIS CLOSE TO CAPTURING HIM AND COMPLETING THE MISSION ALONE.



We're going to have to work together to get over our hangups if we're going to learn to move on Catan's hexagonal grid. It's bad enough that we lost our crew of pawns when we passed within firing range of Battleship.

Explanation

This comic blends board games such as chess, The Settlers of Catan, and Battleship, with exploration, making possible references to space exploration and the Age of Discovery.

The typical representation of explorers has them travel from their homeland aboard a ship to unknown distant places. The travel can get very long, implying the need for food supplies on the ship; and the fact that the crew members have to live together with little room (the ship) for such a long time, with possibilities of failure, getting lost or dying for various reasons, can often lead to tensions between some of them. In the Age of Exploration the explorers were mainly sailors from Europe traveling on the sea to other continents, whereas in space exploration they are astronauts or robots from Earth traveling in space to other planets (or whatever celestial bodies), but the general concepts of exploration remain the same.

Here the explorers are two chess pieces, a knight and a bishop; they have left their "home board", presumably a full 8x8 chess board, aboard a smaller "capsule" made of a small 3x3 chess board in motion. It appears to be flying through space with some kind of miniature rocket-thruster located beneath each corner of the board, trailing exhaust gas/smoke, but the drawing is somewhat ambiguous and it could be floating in water with corner nacelles providing thrust, if it weren't for the

conspicuous lack of ripples, or rolling along a flat surface with wheels leaving a residue. They are apparently headed for a Settlers of Catan board, and already passed near a Battleship board, so these game boards are like islands or regions which the chess pieces explore, coming from a chess board.

Ba3, Nc3 and Ke5 are the identification of chess pieces and their respective position: Ba3 is a bishop on the A3 square, Nc3 a knight on the C3 square, and Ke5 a king on the E5 square. Chess is pretty much a representation of the structure of medieval European society (with the king and queen being the most crucial pieces, the bishops representing the somewhat powerful clergy, the knights corresponding to the armies, the rook alluding the castles, and the pawns being, as the medieval working classes, the most numerous and disposable assets); so chess pieces exploring other places, approaching the "coast of Catan", and reporting to the king ("calling Ke5"), is reminiscent of explorers from Europe who under their king's jurisdiction set sail to other continents during the Age of Exploration.

The explorers are communicating with a "mission control", which is common in space exploration. Also, an "ETA" is an estimated time of arrival.

In chess, the knight and the bishop have different move constraints. The knight can only move two squares horizontally and one square vertically, or two vertically and one horizontally, so on the capsule the knight explorer can only go from one corner square to a black

square, or vice-versa. The bishop can only move diagonally, so this bishop is bound to move only on the white squares. The knight is also the only piece that can "jump" over other pieces, which seems to annoy the bishop, hence the "hopping around"; apparently the bishop put all the food onto the middle square, which the knight can't reach, because the knight was taunting him about his not being able to get onto a black square.

The two pieces are from the opposite chess camps (one black and the other white). This can be a reference to multinational space mission crews, where formerly opponent nations joined their efforts on space missions. But in chess it also means they can capture each other, by getting on the square where the other stands. Here, with the chess turn-by-turn gameplay, the knight won't be able to capture the bishop (except of course in case of error or dumb move), since the bishop will always be able to escape, whereas the bishop is actually one or two moves away from capturing the knight. So saying that he's "this close" to capturing him is a play on words, he is "this close" as in a few moves away, as well as "this close" as in severely annoyed and about to act on it.

Assuming it's the bishop's turn this capture could be accomplished by the Bishop moving to C1, there after the knight would be forced to move to either A2 or B1. The Bishop then moves to B2. The knight then must move to C1 or C3 if it moved to A2, or A3 or C3 if it moved to B1 – all valid positions from which the Bishop could capture. If it's the knights turn, the situation is the same except the Bishop would simply move to B2

regardless of the knight move. Although if there are other pieces, they may simply just not move on a black square.

Finally, the title text adds two jokes. The Settlers of Catan board has a hexagonal grid, which means the chess pieces will have difficulty to move on it, since they are used to moving on a square grid (though luckily, there do exist hexagonal variations of chess). This can draw a parallel with explorers facing, in distant lands, weather conditions, wild animals, atmosphere or whatever condition, to which they are not used at all in their homeland. Battleship is a game where players send shots on the opponent's board, which is why the chess capsule received shots when it passed within firing range of a Battleship board; in pure chess style, it's the pawns of the crew, the least valuable and most disposable chess pieces, who took the shots. It could also be a reference to the en passant chess move, where, under certain conditions, a pawn can be captured after having "passed within firing range" (so to speak) of an enemy pawn; this could explain why only the pawns were lost in passing Battleship.

#840: Serious

December 29, 2010



Not to be confused with `Serious PuTTY`, the Windows terminal client where everything is in `Impact`.

Explanation

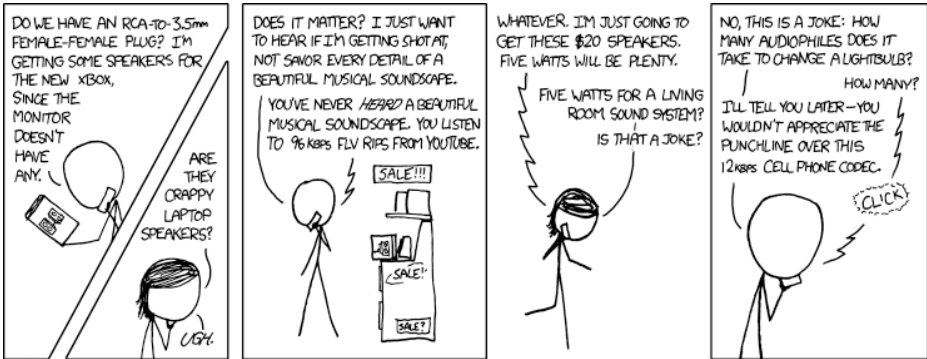
This comic is a play on words with the substance known as "Silly Putty", which is "silly" because it responds oddly to being handled. The comic implies that instead of silly describing the movement of the putty; it describes the emotion of the putty.

Serious Putty on the other hand, would not even like to be touched, because it would prevent it from doing whatever important task it needed to do.

As it says in the title text PuTTY is a Windows Terminal client. Impact is a font that is distributed with Windows that is used in the vast majority of "meme" image macros, such as lolcat pictures.

#841: Audiophiles

December 31, 2010



For years, I took the wrong lesson from that Monster Cable experiment and only listened to my music through alligator-clipped coat hangers.

Explanation

Cueball is buying some new speakers for his television, and asks Megan if they have the right cord to hook them up. Megan begins chiding him for using "crappy laptop speakers", i.e. low-powered, low-quality speakers that don't faithfully reproduce the sound.

Cueball and Megan reproduce the two extremes of the arguments: Cueball simply wants to play a first-person shooter video game (whose soundtrack will either be obscured by gunfire or completely absent during gameplay), regardless of the sound quality, whereas Megan, the audiophile, values music everywhere. Cueball seems to think that's unnecessary, and Megan snipes back that he's never heard beauty, so he wouldn't know; after all, he thinks low-bit-rate re-encodings from YouTube (at the time, notorious for dodgy sound quality) are perfectly fine music. Cueball, frustrated with Megan's perfectionism, states that he's just going to buy cheap 5-watt speakers. While 5 watts may be a lot if you're trying to fill the immediate area with sound from your MP3 player, it'd sound tiny and hollow coming out of a television across the room. An incredulous Megan protests, calling his ideas "a joke." An exasperated Cueball tells a lightbulb joke, the content of which implies that the content doesn't matter to her, only the quality in which it's delivered to her ear. Megan promptly hangs up; she could've been highly offended by the joke, or could, as Cueball predicted, been annoyed enough by the low audio quality that the punchline was delivered in to

hang up.

The title text is referring to a forum post from audioholics.com (post #28, "We gathered up a 5 [sic] of our audio buddies...."), where a user did a blind audio test using Monster cable and coat hangers with soldered on alligator clips, and the audiophiles were unable to discern any difference. Randall instead just uses coat-hangers to connect his speakers, not getting that the point of the test was not to extol the high transmission quality of coat hanger wire but to lampoon the belief that supposedly high-quality speaker cables make an audible difference in the audio output.

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